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HARVARD SCHOOL OF PUBLIC HEALTH



Courses of Instruction

1956-1957

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These publications include the report of the president; the general catalogue issue; the announcements of the College and the several professional schools of the University; the courses of instruction; the pamphlets of the several departments; and the like.

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THE HARVARD SCHOOL OF PUBLIC HEALTH

1956-57



*55 Shattuck Street
Boston, Massachusetts*

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Section I

Introductory Information

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HARVARD COLLEGE

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Secretary to the Corporation

DAVID WASHBURN BAILEY, A.B.

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1956

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1957

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1958

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 S.D. (hon.)
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1959

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1960

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 DAVID ROCKEFELLER, S.B., PH.D.

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DAVID WASHBURN BAILEY, A.B., *Secretary*
 JAMES ROBBINS REYNOLDS, A.B., *Assistant Secretary*
 Massachusetts Hall, Cambridge.

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President: NATHAN MARSH PUSEY, PH.D., LL.D., L.H.D.

Office, 1 Massachusetts Hall, Cambridge.

Dean: JOHN CRAYTON SNYDER, A.B., M.D.

Assistant Dean: HUGH RODMAN LEAVELL, S.B., M.D., DR.P.H.

Assistant Dean: JAMES LAVERRE WHITTENBERGER, S.B., M.D.

Assistant to the Dean and Faculty Advisor for

Foreign Students: WILLIAM HATHAWAY FORBES, DR.PHIL., M.D.

Assistant to the Dean: ROGER BENHAM SPAULDING, A.B.

Administrative Assistant to the Dean: MARGARET GUSS BARNABY, A.B.

Director, Health and Medical Care

Program for Students: DONALD ASA TUCKER, M.D.

Office, Peter Bent Brigham Hospital, 721 Huntington Avenue,
Boston.

Bursar: CHARLES CROSBY PYNE, S.B.

Office, Lehman Hall, Cambridge.

The Offices of Administration of the School of Public Health are located at 55 Shattuck Street, Boston.

ADMINISTRATIVE BOARD

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FACULTY OF PUBLIC HEALTH *

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FREDERICK FULLER RUSSELL, M.D., S.D. (hon.), *Professor of Preventive Medicine and Epidemiology, Emeritus.*

ERNEST EDWARD TYZZER, PH.B., A.M., M.D., S.D. (hon.), *George Fabyan Professor of Comparative Pathology, Emeritus and Professor of Tropical Medicine, Emeritus.*

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MELVILLE CONLEY WHIPPLE, A.M. (hon.), *Associate Professor of Sanitary Chemistry, Emeritus.*

PROFESSORS **

JOHN CRAYTON SNYDER, A.B., M.D., *Microbiology (Dean).*

HUGH RODMAN LEAVELL, S.B., M.D., DR.P.H., *Public Health Practice (Assistant Dean).* (Absent until April 1, 1957)

JAMES LAVERRE WHITTENBERGER, S.B., M.D., *Physiology. (Assistant Dean).*

PHILIP DRINKER, S.B., CHEM.E., S.D. (hon.), LL.D., A.M. (hon.), *Industrial Hygiene.*

GORDON MASKEW FAIR, S.B., S.M. (hon.), DR. ING. (hon.), *Sanitary Engineering.*

* Arranged, with the exception of the Deans, in order of appointment to present rank.

** For details of title, see listing under the Department.

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JOHN EVERETT GORDON, S.B., PH.D., M.D., A.M. (hon.), F.R.C.P. (Lond.),
Epidemiology.

HAROLD COE STUART, LITT.B., M.D., A.M. (hon.), *Maternal and Child Health.*

HUGO MUENCH, A.B., M.D., DR.P.H., A.M. (hon.), *Biostatistics.*

FREDRICK JOHN STARE, S.M., PH.D., M.D., A.M. (hon.), *Nutrition.*

CONSTANTIN PRODROMOS YAGLOU, B.A., S.B., M.M.E., A.M. (hon.), *Industrial Hygiene.*

DONALD LESLIE AUGUSTINE, S.B., S.D., S.D. (hon.), A.M. (hon.), *Tropical Public Health.* (Absent January 1 to June 30, 1957)

THOMAS HUCKLE WELLER, A.B., S.M., M.D., *Tropical Public Health.*

HAROLD ALLEN THOMAS, JR., S.D., *Sanitary Engineering.*

ASSOCIATE PROFESSORS

FRANZ GOLDMANN, M.D., *Public Health Practice.*

DAVID MARK HEGSTED, S.M., PH.D., *Nutrition.*

LESLIE SILVERMAN, S.D., *Industrial Hygiene.*

LEONID SERGIUS SNEGIREFF, M.D., DR.P.H., *Public Health Practice.*

ROSS ARMSTRONG MCFARLAND, A.B., PH.D., S.D. (hon.), *Industrial Hygiene.*

EDWARD STEVENSON MURRAY, A.B., M.D., M.P.H., *Microbiology.*

JANE WORCESTER, A.B., DR.P.H., *Biostatistics.*

JOHANNES IPSEN, C.A., C.M., DR.MED., M.P.H., *Microbiology.*

THEODORE HUNT INGALLS, A.B., M.D., *Epidemiology.*

ROBERT BALENTINE REED, PH.D., *Biostatistics.*

STANLEY JAY SARNOFF, A.B., M.D., *Physiology.* (Absent 1956-57)

BERTHA SHAPLEY BURKE, A.M., *Maternal and Child Health.*

ELIZABETH PRINCE RICE, A.B., S.M., *Maternal and Child Health.*

GERALD CAPLAN, B.SC., M.B., CH.B., M.D., *Public Health Practice.*

WILLIAM FRED MAYES, S.B., M.D., M.P.H., *Public Health Practice.*

JERE MEAD, S.B., M.D., *Physiology.*

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CHARLES REGAN WILLIAMS, PH.D., *Industrial Hygiene.*

BENJAMIN DAVID PAUL, A.B., PH.D., *Public Health Practice.*

ROBERT PERSHING GEYER, S.M., PH.D., *Nutrition.*

JEAN MAYER, B.A., PH.D., D.SC., *Nutrition.*

CLINICAL PROFESSOR

SAMUEL BROWN KIRKWOOD, A.B., M.D., *Maternal and Child Health.*

ASSOCIATE CLINICAL PROFESSOR

ABRAHAM DANIEL RUBENSTEIN, A.B., M.D., M.P.H., *Epidemiology.*

LECTURERS

HELEN LUCILE ROBERTS, A.B., M.D., M.P.H., *Public Health Practice.*

ROBERT HENRY HAMLIN, A.B., M.D., M.P.H., LL.B., *Public Health Practice.*

WILLIAM HATHAWAY FORBES, DR. PHIL., M.D., *Physiology.*

ASSISTANT PROFESSORS

ALFRED LEO FRECHETTE, M.D., M.P.H., *Public Health Practice.*

NORBERT ANTON WILHELM, S.B., M.D., *Public Health Practice.*

THOMAS FEGER PUGH, M.D., M.P.H., *Epidemiology.*

MARTHA FREDERICKA TRULSON, S.B., M.P.H., S.D. IN HYG., *Nutrition.*

BERYL JOSEPHINE ROBERTS, ED.M., M.P.H., *Public Health Practice.*

MARGARET LIVINGSTON VARLEY, S.B., M.P.H., *Public Health Practice.*

BENJAMIN GREELEY FERRIS, JR., A.B., M.D., *Physiology.*

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ROBERT SHIH-MAN CHANG, S.B., M.D., S.D. IN HYG., *Microbiology.*

FRANKLIN ALLEN NEVA, S.B., M.D., *Tropical Public Health.*

SAMUEL DENNIS BELL, JR., A.B., M.D., M.P.H., *Microbiology.*

PAULINE GEORGE STITT, M.D., M.P.H., *Maternal and Child Health.*

THEODORE BERTUS VAN ITALLIE, S.B., M.D., *Nutrition.*

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CARL ERNEST TAYLOR, S.B., M.D., DR.P.H., *Epidemiology*.

STEPHEN BOURNE ANDRUS, S.B., M.D., *Nutrition*.

CHARLES EDGAR BILLINGS, S.M., *Industrial Hygiene*.

ELI CHERNIN, S.B., A.M., S.D., *Tropical Public Health*.

RICHARD DENNIS, S.M., *Industrial Hygiene*.

ROY F FEEMSTER, A.B., M.D., DR.P.H., *Public Health Practice*.

STANLEY NORTON GERSHOFF, A.B., S.M., PH.D., *Nutrition*.

ASSOCIATES

ERIK BERGLUND, A.B., M.D., *Physiology*.

FRANK RANDOLF PHILBROOK, S.B., M.D., M.P.H., *Epidemiology*.

FRANK LUSK BABBOTT, JR., A.B., M.D., M.P.H., S.M. IN HYG.,
Epidemiology.

OSCAR WILLIAM PORTMAN, S.B., M.D., *Nutrition*.

JOSEPH JOHN VITALE, S.M., S.D. IN HYG., *Nutrition*.

The names of the members of the teaching and research staff are listed in their respective departments under Content of the Courses, pages 39-81.

THE COMMITTEE APPOINTED BY THE BOARD OF
OVERSEERS TO VISIT THE SCHOOL OF
PUBLIC HEALTH

1955 - 56

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C. FRANCIS BEATTY Director (Retired) Socony-Mobil Oil Company, Inc.	Scarsdale, New York
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CHARLES F. WILINSKY, M.D. Executive Director (Ret.) Beth Israel Hospital	Boston, Massachusetts

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HUNTINGTON WILLIAMS, M.D.	Baltimore, Maryland
Commissioner of Health	
Baltimore City Health Department	
JOHN S. ZINSSER	Philadelphia, Pennsylvania
Vice-Chairman of the Board	
Merck & Co., Inc.	

INTRODUCTION

The Harvard School of Public Health is one of the six privately endowed institutions in the United States which are accredited for graduate education in public health. The School operates as an independent unit of Harvard University in close association with the Faculty of Arts and Sciences, the Graduate School of Education, the Medical School, the Dental School, and the various Harvard hospitals. This introduction indicates in a general way the opportunities for students who have a background in one or more of the various disciplines upon which public health is based.

The profession of public health calls upon the skills and knowledge of physicians, nurses, engineers, dentists, veterinarians, nutritionists, biologists, natural scientists, social scientists, educators and other specialists. The individual physician who takes the steps necessary to protect a patient from illness is an essential element in public health. Harvard University recognized this in 1909 by the creation of a new department for the instruction of medical students in the field of preventive medicine. In 1913 Harvard and the Massachusetts Institute of Technology established the first American school for health officers, from which, in 1922, Harvard developed its present School of Public Health.

The School is deeply concerned with two major fields of study. The first field comprises problems which have emerged as certain areas of the world have become highly urbanized and technologically advanced. Foremost among these problems is the prevention of such diverse entities as mental illness, diseases of old age, cancer, heart disease, and accidents. Furthermore, research is needed to achieve effective administrative technics for the provision of optimum health services for entire communities.

The other major field of study is equally challenging to the public health sciences. Half of the world's population resides in areas where infectious diseases and malnutrition are the primary problems. Although relatively good health has been attained in the western nations by means of their public health programs, it is often impos-

HARVARD UNIVERSITY

sible to use such programs in many regions of the world at present because of basic differences in culture, geography, or economic status. This is the challenge to scientists in the health profession — to find the knowledge which is needed as the basis for successful public health work in the underdeveloped areas.

The objective of the Harvard School of Public Health is to develop leaders in the profession of public health. The major part of the curriculum of the School is devoted to the courses leading to the degree of Master of Public Health which is intended primarily for graduates in medicine, dentistry, veterinary medicine, or allied professions. The courses are also open to students who have satisfactory preparation in the basic medical sciences and who have developed an understanding of community problems by working in a public health field. The work requires one academic year of study, during which the students acquire an understanding of the fundamental principles of public health sciences and an appreciation of their application in special fields of work. Concentrated study in one of these special fields may be undertaken by students whose background is appropriate.

For students who are interested in developing competence in some specialty of public health, programs of study are available leading to the degree of Master of Science in Hygiene. These programs provide an opportunity for intensive training in a specific field. Each individual program is designed to fit the student's previous background and his need for further development. An effort is made to emphasize the relation of the student's specialty to public health as a whole.

A new curriculum is being developed this year for future teachers of preventive medicine. This program is described in more detail on page 32.

Physicians who are interested primarily in those aspects of public health which are of particular concern to industry may register at the School for a one year program which leads to the degree of Master of Industrial Health. This program includes instruction in basic public health sciences but allows time for concentration in subjects of more immediate interest to the physician who is engaged in

SCHOOL OF PUBLIC HEALTH

industrial medicine and who must understand the principles of personnel management and of industrial health hazards as well as the clinical aspects of his work.

The programs which lead to the advanced degrees of Doctor of Public Health and of Doctor of Science in Hygiene are based on individual research and the preparation of a thesis embodying an original contribution to knowledge. Candidates for these degrees must complete the work required for the corresponding master's degrees and must demonstrate a high degree of competence, scientific ability and imagination.

Subject to limitations of space, the School accepts a few qualified students who are not candidates for degrees, but who are interested in following special programs of various kinds. For example, industrial physicians may arrange a concentrated program of post-graduate training in industrial health during the eight weeks of the third period of the year.

The research program of the Harvard School of Public Health extends from the basic laboratory sciences to the surrounding communities. The School maintains a direct relation with the staff of the health departments of several municipalities in the Boston area and the Commonwealth of Massachusetts. The Faculty participates in the activities of many voluntary, governmental, industrial and military health agencies.

FACILITIES

Most departments of the School of Public Health are housed in two buildings in the same block: one at 55 Shattuck Street, the other at 1 Shattuck Street, Boston (15). The administrative offices are in the former building. Between the School's two buildings are the Harvard Medical and Dental Schools; the Children's Medical Center is next door, the Peter Bent Brigham Hospital is across the street and the Boston Lying-in Hospital and Vanderbilt Hall are a block away. The latter is a dormitory for medical students, where students of the School of Public Health may eat.

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The facilities of the hospitals and the Harvard Medical and Dental Schools are available to qualified students of this School, and are used in connection with the teaching of various subjects. In addition, students enrolled at the School may take courses in other departments of Harvard University. Students frequently enroll for work in the social sciences, public administration, business administration and medical sciences. Certain graduate courses at the Massachusetts Institute of Technology are also open to students of this School.

The Department of Sanitary Engineering of the School is also part of the Division of Engineering and Applied Physics of the Graduate School. The basic course for students of the School of Public Health is taught here, but students may also register for certain special and advanced courses in Sanitary Engineering given in Cambridge.

Of particular interest to students of this School is the close contact with various health agencies in Massachusetts and elsewhere. The divisions of the Massachusetts Department of Public Health not only furnish opportunities for observation and training in their fields, but their staffs enter into the teaching of courses at the School. Administrative methods at local levels may be studied at first hand in the health departments of the cities of Boston, Cambridge, Worcester and the Town of Brookline, the directors of which are also faculty members and take active part in course teaching.

There are two special areas for study and training purposes closely linked to the School. The Whittier Street Health Center, a district health unit of the Boston City Health Department, is used not only for purposes of demonstration and training, but also as a field for research in problems of administration, of mental health, and of human ecology in general. The other special area includes the territory covered by the Nashoba Associated Boards of Health and the urban community of Leominster, some 30 miles from the School. It furnishes opportunities for the investigation of rural problems and administrative methods, supplementing those offered by Whittier Street.

SCHOOL OF PUBLIC HEALTH

The Institute of Laboratories of the Massachusetts Department of Public Health is engaged in a program of general interest, attracting visitors and students from various parts of the United States and from foreign countries. It not only performs a wide variety of standard bacteriological, immunological and chemical procedures, but is actively engaged in several research programs. Its Superintendent is a member of the School's faculty. This close contact with one of the country's outstanding laboratories provides unsurpassed opportunities for qualified students who wish to obtain intensive experience in many types of laboratory methods of particular pertinence to public health.

The clinical and laboratory facilities of the Lemuel Shattuck Hospital are available to students of the School. This new hospital was built by the Department of Public Health of the State of Massachusetts for the active treatment of patients with chronic diseases. Since the average duration of hospitalization is much longer than that in general hospitals, an opportunity is afforded to study chronic disease problems not encountered in general hospitals. The training program, consultant rounds and professional staff appointments are under the aegis of the Deans of Boston University, Harvard and Tufts University Medical Schools, as well as the Harvard School of Public Health. Research laboratories at the Shattuck Hospital are engaged in studies of arthritis, hematology, pulmonary function, radioisotopes, cancer therapy and chronic renal and hepatic diseases.

The location of the Harvard School of Public Health places it in one of the great medical and industrial centers of this country. Clinical subjects, medical care and hospital administration may be studied at first hand. The many large and small industrial organizations permit the observation and investigation of a wide range of problems of occupational health.

Libraries

The joint Library of the School of Public Health and the Harvard Medical School is on the second floor of the Administration Building of the Medical School. It is open from 9 a.m. until 10 p.m. on

HARVARD UNIVERSITY

week days, from 9 a.m. until 5 p.m. on Saturdays, and from 2 p.m. until 6 p.m. on Sundays. There are at present 113,248 volumes, 212,195 pamphlets, and 1,124 current periodicals on file in this library.

Students also have the privilege of using the College Library in Cambridge, as well as the various departmental libraries belonging to the University, in all of which there are over 4,000,000 volumes and pamphlets.

The Boston Public Library is open to students who are residents of Boston, and to students not residents of Boston who have filed a bond at the Bursar's office.

The Boston Medical Library, No. 8 The Fenway, contains about 224,477 bound volumes, 158,481 pamphlets, and 1,042 current periodicals on file. For those who desire to consult medical literature, this very valuable library is open on week days from 9 a.m. to 5 p.m., Saturdays 9 a.m. to 1 p.m., and on Mondays and Thursdays until 9 p.m., Oct. 1 through May 31.

Section II
Courses of Study and Degrees

COURSES OF STUDY AND DEGREES

MASTER OF PUBLIC HEALTH

Requirements for Admission

Students may apply for admission as candidates for the Master of Public Health degree if they are

- (1) graduates of approved schools of medicine, dental medicine, veterinary medicine or nursing* *or*
- (2) graduates in arts, sciences, or engineering with adequate training in the sciences basic to public health, who
 - a. have completed at least one academic year of acceptable graduate study in a public health field, and who
 - b. have had a period of acceptable experience in a responsible position in public health practice.

In exceptional circumstances the Administrative Board may admit unusually well qualified applicants in the second category who lack *a* or *b*.

Requirements for the Degree

One academic year must be spent in residence at the University. The student must complete satisfactorily the required and elective courses to a total of 40 credit units. The general course entitled "Ecology: Biological and Social" and the basic courses in Biostatistics, Epidemiology, Public Health Practice, Sanitary Engineering and Environmental Hygiene are required of all students unless they can demonstrate equivalent preparation. The schedule of courses is shown on pages 101-108.

By the end of the first period each student selects a field of special interest in which approximately one third of the year's work is to

* Graduates in nursing must (a) have obtained a college degree; (b) have completed their study in public health nursing or its equivalent in an approved University program; (c) have had public health nursing experience, some of which is on a supervisory level.

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be taken. A faculty advisor assists each student in planning his program which is reviewed by the Committee on Degrees.

Upon completion of all course requirements the student takes a comprehensive examination in which he must demonstrate satisfactorily his ability to coordinate not only the basic subjects, but also various specialties in the field of public health. This examination will be given only at the end of a semester.

DOCTOR OF PUBLIC HEALTH

For the degree of Doctor of Public Health the student must complete an approved program of independent and original investigation in a special field and must present the results of this research in an acceptable thesis.

Requirements for Admission

1. An applicant for admission to candidacy for this degree must be either (a) a graduate of an approved school of medicine, dental medicine or veterinary medicine, or (b) the holder of another doctoral degree in one of the basic sciences related to public health. In exceptional cases, an individual lacking a previous doctoral degree may be admitted if he has displayed outstanding ability in previous academic work and in practical public health experience.

2. The applicant must hold the degree of Master of Public Health or its equivalent from a recognized institution and must indicate ability to undertake original investigation in a special field.

Requirements for the Degree

1. The student is required to complete a minimum of two semesters of resident research. In exceptional cases the required work for the degree may be completed in this year, although generally, preparation of an acceptable thesis will require a longer period.

2. The candidate must possess a reading knowledge of at least one language, other than English, in which there exists a significant body of literature relevant to the candidate's field of study. The

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ability to read this language must be demonstrated before the candidate is permitted to take the qualifying examination.

3. After the applicant enters the School, an advisory committee is appointed to review his preparation in the chosen and related fields of study, to pass upon the plan of the proposed thesis, and to determine when the candidate is eligible to take the qualifying examination. This examination is oral, covers the basic public health sciences, and must be passed before the candidate is permitted to proceed with the thesis.

4. The advisory committee continues to supervise the student's research, including the preparation of his thesis.

5. When the advisory committee has approved the thesis, it should be typed in final form, and three unbound copies should be deposited in the Dean's office at least four weeks before the date on which the final examination is to be held. In some instances the thesis will be submitted to a reading committee, if requested by the advisory committee or the Committee on Degrees. Members of the reading committee may be selected from any faculty of the University and will be appointed by the Dean.

6. Each copy of the thesis must be accompanied by a summary not exceeding 1200 words in length, which shall indicate clearly the purposes, methods, and results of the investigation.

7. After the thesis is accepted, the student is given an oral examination by the faculty. The examination is conducted by the Degrees Committee and covers the thesis as well as those public health subjects to which the thesis is related. Ordinarily this must be accomplished within five years after the qualifying examination is passed.

MASTER OF SCIENCE IN HYGIENE

(With Designation of the Field of Concentration)

This degree is granted on fulfillment of a program of advanced work in one of the basic disciplines of public health. The courses taken must form an integrated plan of study in one branch of knowledge and allied subjects.

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Requirements for Admission

An applicant for this degree must have received an academic degree from an institution of recognized standing, and must be prepared to do work at a graduate level in his field of concentration.

Requirements for the Degree

1. Two academic years of graduate work must be completed, one of which must have been spent in residence. A student with an exceptional record of accomplishment may be able to complete the requirements in less than two academic years. Decision on this point may be made by the Administrative Board at any time after the student completes one semester of residence, upon the recommendations of the Committee on Degrees and the department in which the student has his major interest.

2. The student must complete a program of at least 40 credit units, including the general course entitled "Ecology: Biological and Social." He must also take the basic courses in Biostatistics and Epidemiology, unless he can demonstrate equivalent preparation. Elective courses must be approved by the Committee on Degrees on the recommendation of the head of the department in which the student wishes to concentrate. All courses in the primary and related fields of interest must be passed with an honor grade.

3. The student must pass with an honor grade a comprehensive examination in his principal and related fields of study. This examination is given after the completion of all course requirements. It will be given only at the end of a semester, and ordinarily must be taken within three years after first enrollment in the School.

DOCTOR OF SCIENCE IN HYGIENE

(With Designation of the Field of Concentration)

This degree is granted on successful completion of a program of independent and original research in one of the basic disciplines of public health.

Requirements for Admission

Candidates for the degree of Doctor of Science in Hygiene must have completed work equivalent to that required for the degree of Master of Science in Hygiene and must indicate ability to undertake original investigation in a special field.

Requirements for the Degree

1. The student is required to complete a minimum of two semesters of resident research. In exceptional cases the required work for the degree may be completed in this year, although generally, preparation of an acceptable thesis will require a longer period.

2. The candidate must possess a reading knowledge of at least two languages, other than English, in which there exists a significant body of literature relevant to the candidate's field of study. The ability to read this language must be demonstrated before the candidate is permitted to take the qualifying examination.

3. After the applicant enters the School, an advisory committee is appointed to review his preparation in the chosen and related fields of study, to pass upon the plan of the proposed thesis, and to determine when the candidate is eligible to take the qualifying examination. This examination is oral, covers the chosen and related fields of study as well as the course work represented by the Master of Science in Hygiene degree, and must be passed before the candidate is permitted to proceed with the thesis. Students who enroll in the School of Public Health with the intention of becoming doctoral candidates are expected to complete required courses and pass their qualifying examinations within three years, if not sooner, for full-time students, or four years for part-time students.

4. The advisory committee continues to supervise the student's research, including the preparation of his thesis.

5. When the advisory committee has approved the thesis, it should be typed in final form, and three unbound copies should be deposited in the Dean's office at least four weeks before the date on

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which the final examination is to be held. In some instances the thesis will be submitted to a reading committee, if requested by the advisory committee or the Committee on Degrees. Members of the reading committee may be selected from any faculty of the University and will be appointed by the Dean.

6. Each copy of the thesis must be accompanied by a summary not exceeding 1200 words in length, which shall indicate clearly the purposes, methods, and results of the investigation.

7. After the thesis is accepted, the student is given an oral examination by the faculty. The examination is conducted by the Degrees Committee and covers the thesis as well as those public health subjects to which the thesis is related. Ordinarily, this must be accomplished within five years after the qualifying examination is passed.

MASTER OF INDUSTRIAL HEALTH

The course of training leading to the degree of Master of Industrial Health is designed to meet the increasing need for physicians qualified to plan, organize, and direct health programs for industry and labor.

Requirements for Admission

Candidates for this degree must be graduates of an acceptable school of medicine. Students from the United States should have completed an internship of at least twelve months in a hospital approved by the American Medical Association. While preference will be given to physicians who have had previous experience in industrial practice, the course is open to all qualified physicians.

Requirements for the Degree

1. One academic year, consisting of four eight-week periods, must be spent in residence at the University.
2. The student must complete 40 credit units satisfactorily. All candidates for the degree are expected to take the following courses unless they can demonstrate equivalent preparation:

Industrial Medicine

Basic Problems in Industrial Hygiene
Industrial Medicine
Industrial Medical Clinics
Personnel Administration
Human Problems of Adjustment in Industry

Environmental Hygiene

Environmental Hygiene
Environmental Physiology
Principles of Sanitation
Industrial Air Analysis
Hygienic Aspects of Ventilation

Public Health

Ecology: Biological and Social
Principles of Epidemiology
Principles of Biostatistics
Organization of Medical Care

In addition, the student may select from the general curriculum courses of interest to him, or do special work subject to approval of the Head of the Department of Industrial Hygiene.

3. At the end of the academic year, a comprehensive examination will be given. This may be oral or written and will be designed to test the knowledge and judgment of the student and his ability to coordinate the basic industrial health subjects.

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PROGRAM FOR TEACHERS OF PREVENTIVE MEDICINE

In medical schools throughout the world teaching in the fields of Preventive and Social Medicine has been developing rapidly. New departments are being set up in many schools and staff members are being drawn from almost every possible medical background. The growing demand for a training program specifically to prepare for teaching preventive medicine has led to the present plan which the Harvard School of Public Health is developing in close cooperation with the departments of preventive medicine of several medical schools.

The new curriculum consists of a two-year program in which special emphasis will be given to tutorial work and practical experience. The details of the plan will be adapted to the needs of individual students. Teachers of preventive medicine should be competent in both clinical medicine and public health since their teaching should bridge the gap between these two fields. The first year will provide either public health or clinical training depending on the student's previous experience. Most candidates will come with an adequate clinical background and will concentrate their work in the regular courses at the School of Public Health. Students who have adequate training and experience in public health will have opportunities to improve their clinical background. Both groups of students will take a special seminar in preventive medicine. In the second year emphasis will be placed on methods of teaching preventive medicine. Special courses in educational methods and advanced preventive medicine will be given during the first quarter. During the rest of the year, residency type training will be arranged in the departments of preventive medicine in certain medical schools in which students will be given opportunities for teaching under supervision. In the summers, special programs of research or conferences in various centers will be planned. Completion of the program will qualify the students for an appropriate degree, in most cases, the Master of Public Health or Master of Science in Hygiene. In exceptional cases the previous academic experience of a student may qualify him to study for a Doctor of Public Health degree.

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PROGRAM IN AVIATION MEDICINE

In February of 1953 the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association authorized certification by the American Board of Preventive Medicine, Inc. of properly qualified specialists in aviation medicine. The Harvard School of Public Health has developed a program to meet the Board requirements of one year of graduate education in the basic sciences related to aviation medicine in a school of public health. This program has the approval of the Committee on Aviation Medical Training and Education of the Aero Medical Association. Those students wishing to obtain credit toward certification in the field of aviation medicine may enroll for the degree of Master of Public Health. The requirements for this degree are outlined on pages 25-26. A series of seminars will be given during the academic year to meet the special interests of those concentrating in the field of aviation medicine, not only for representatives of the military services but also for those who plan to enter the medical services of the aircraft manufacturing companies and civil airlines.

PROGRAM IN PUBLIC HEALTH EDUCATION

This program is offered by the School of Public Health with the cooperation of the Department of Social Relations (Faculty of Arts and Sciences) and the School of Education. The program as outlined is flexible and may be modified to suit the needs of the student. Classwork is supplemented by three months of supervised field training following the second semester.

Candidates may study for the degree of Master of Public Health or Master of Science in Hygiene, depending upon the qualifications of the individual applicant. Work toward the degree of Doctor of Science in Hygiene is offered to exceptional students.

Health education is an area of public health in which there has been rapid development in recent years. Professional opportunities

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are numerous and varied and exist at local, state and national levels in both official and voluntary agencies.

The program of study includes the following courses:

Public Health and Health Education

(School of Public Health)

<i>Required Courses:</i>	<i>Credits</i>
Community Health Education	6
School Health Education	2
Group Dynamics	2
Ecology: Biological and Social	3
Environmental Hygiene	2
Principles of Public Health Practice	3
Public Health Administration	6
Including Health Education, Public Health Nursing, and Social Work in Health Agencies	
Principles of Biostatistics	4
Principles of Epidemiology	2.5
Principles of Sanitation	3
Psychosocial Problems	1
	<hr/>
	TOTAL 34.5

Electives:

Courses in medical care, mental health, public health history, cancer control, nutrition and others, may be elected depending on individual interests and training.

Social Relations and Education

(Faculty of Arts and Sciences; School of Education)

A selection of courses from the following, which presuppose some knowledge of the social sciences and education, will vary with the student's background and needs.

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Social Relations:

<i>Course</i>	<i>Credits</i>
Cognitive Process in Personality (Psych. 148)	5
Field Methods in Survey Research (S.R. 265)	5
Health and Illness in Cross-Cultural Perspective (S.R. 283)	5
Introduction to Anthropology (Anth. 1b)	5
Introduction to the Study of Small Groups (S.R. 148)	5
Opinion and Communication (S.R. 152)	5
Social Organization (S.R. 116)	5
Social Psychology (S.R. 117a)	5
The Individual and Society (S.R. 175)	5

Education:

<i>Course</i>	<i>Credits</i>
Introduction to Administrative Problems (C-17)	5
History and Philosophy of Education (A-201)	5
Introduction to Educational Psychology (B-2)	5
Interdisciplinary Seminar on the Behavioral Sciences and Education (B-213)	5
Curriculum and Methods (C-10)	5

Field Work

Arrangements will be made with approved official and voluntary agencies for three months of supervised field work in community health education.

DEGREES IN ENGINEERING

Graduates of engineering colleges or scientific schools of recognized standing who are interested in the sanitary engineering or industrial hygiene aspects of public health may be admitted to the Division of Engineering and Applied Physics of the Graduate School of Arts and Sciences as candidates for the degree of Master of Sci-

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ence, Master of Engineering or Doctor of Philosophy. They may elect appropriate courses in the School of Public Health as a part of the program for these degrees.

For further information write to the Committee on Admissions, Graduate School of Arts and Sciences, Farlow House, Cambridge 38, Massachusetts.

Section III
Content of Courses

CONTENT OF COURSES

INTERDEPARTMENTAL AND DIVISIONAL COURSES

Public Health Forums.

Lectures. *Dates to be announced.* Members of the Faculty, and guest lecturers.

In order to afford an opportunity for the entire student body to meet with the Faculty and distinguished guest lecturers, forums are held at various times during the academic year. They are designed to bring the interests of several departments to bear on topics of general importance.

Public Health 1a. Ecology: Biological and Social

Lectures and seminars. *Mondays, Wednesdays and Fridays, 10-12, first period.* Dr. REED, Dr. PAUL and associates.

Credit 3 units.

The success of public health programs depends upon understanding the forms and forces active in community life. This course of instruction deals with social, cultural and biological characteristics of human populations, the organization and behavior of human communities, and their relationship to the environment. The objective of the course is to provide a knowledge of human populations and of the nature of interpersonal relationships in the community in preparation for the study of public health, in the same sense that anatomy, physiology and psychology contribute to the study of medicine.

Public Health 3c. History and Philosophy of Public Health

Seminars. *Saturdays, 9-11, third period.* Dr. FRECHETTE.

Credit 1 unit.

The growth, development and philosophy of the modern health movement, particularly in the Anglo-Saxon countries is discussed. Cultural, social and economic forces that have influenced the movement are studied in relation to the evolution of health sciences and services.

Environmental Hygiene 1b.

Lectures. *Tuesdays and Thursdays, 10-11, Saturdays, 10-12, second period.* Professor Drinker, Dr. Whittenberger and associates.

Credit 2 units.

This course is presented by members of the Industrial Hygiene and Physiology Departments. Physiologic responses evoked by the physical and chemical attributes of man's environment will be described and the limits of such

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responses emphasized. Practical methods for assessing environmental stresses and for modifying the environment to fit man's needs will be presented. Topics covered will include: temperature, humidity, barometric pressure, ionizing and non-ionizing radiation, air pollution, toxicology, illumination, and noise.

DEPARTMENT OF BIOSTATISTICS

HUGO MUENCH, A.B., M.D., DR.P.H., A.M. (hon.), *Professor of Biostatistics and Head of the Department*

JANE WORCESTER, A.B., DR.P.H., *Associate Professor of Biostatistics*

ROBERT B. REED, PH.D., *Associate Professor of Biostatistics and Human Ecology*

PAUL M. DENSEN, A.B., S.D., *Visiting Lecturer on Biostatistics*

MARGARET E. DROLETTE, A.B., M.P.H., *Instructor in Biostatistics*

MARIAN G. MALOON, A.B., ED.M., *Instructor in Biostatistics*

MINDEL C. SHEPS, M.D., M.P.H., *Research Associate in Biostatistics*

ELIZABETH G. FLANAGAN, S.B., *Research Associate in Biostatistics*

Graduates of the School, whatever their chosen careers, will find themselves in positions where they must initiate programs and evaluate the results of the programs. Whether their work lies in administration or in research, students must be able to pose and to answer questions and to read critically the literature in their fields. Knowledge of the scientific method is essential to these purposes.

Since most students come to the School with no background in statistical technics and their application, the first course has been organized to present essential methodology, with the realization that few students will become workers primarily in the field of statistics. Relatively little emphasis is laid on technics per se, and these have been included only in the amount necessary for an appreciation of principles involved and methods used. The main stress is on the interpretation of quantitative data affected by a multiplicity of causes, the understanding of the meaning of the usual measures employed and the legitimate fields of use of these measures. In general, the first course is designed to help the student state his question clearly, determine the method which will answer the question and establish the limits within which the answer has validity.

In addition, elective courses provide opportunities for basic grounding in statistical methods and analytical procedures which are of value to the student who will be engaged in the fields of epidemiology, of laboratory research or of administration.

SCHOOL OF PUBLIC HEALTH

Biostatistics 1a, b. Principles of Biostatistics

Lectures, discussions, and laboratory. *Mondays and Fridays, 2-5, first and second periods.* Staff of the Department.

Credit 4 units.

Subjects presented include collection, tabulation, and elementary analysis of data; measures of center and of dispersion; and sampling from populations. The aim of the course is to prepare the student to draw justified conclusions from numerical data.

Biostatistics 2c, d. Analysis of Population Data

Lectures, discussions, and laboratory. *Tuesdays and Thursdays, 9-12, third period; Tuesdays, 9-12, fourth period.* Staff of the Department.

Credit 3 units.

The student is introduced to statistical methods which he will find of use in his attack on various types of problems. The subject matter in the third period includes a discussion of probability, association and correlation with examples from a variety of fields in public health. The fourth period is devoted to life table methods and simple mathematical models which can be used to describe the growth of individuals, populations and certain characteristics of the population such as immunity status.

Prerequisites: Biostatistics 1a, b; Epidemiology 1b; or their equivalents.

Biostatistics 3c, d. Analysis of Data Resulting from Special Studies

Lectures, discussions and laboratory. *Tuesdays and Thursdays, 9-12, third period; Thursdays, 9-12, fourth period.* Staff of the Department.

Credit 3 units.

During the third period this course meets jointly with Biostatistics 2c, d. In the fourth period emphasis is placed on statistical technics used in planned studies including small sample theory, variance analysis, dosage response and design of experiments.

Prerequisites: Biostatistics 1a, b.

Biostatistics 4c, d. Statistical Methods in Program Evaluation

Lectures and seminars. *Fridays, 11-1, third and fourth periods.* Staff of the Department, with the cooperation of other departments.

Credit 2 units.

This course deals with the methods available to public health workers for planning and evaluating health programs. The subject matter will include: special uses of routine statistics; design and analysis of questionnaires; surveys

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and sampling methods. Measures of both health status and attitudes will be discussed.

Prerequisite: Biostatistics 1a,b, or the equivalent.

Biostatistics 5c, d. Seminar in Biostatistics

Seminars. One period of two hours weekly throughout the third and fourth periods. Time to be arranged. Staff of the Department.

Credit 2 units.

This seminar is arranged primarily for the Department's staff. However, occasional students with special interest and sufficient preparation will be admitted.

Biostatistics 20. Biostatistical Research

Time and credit to be arranged according to amount of work done.

Supervised individual work by students: (a) Those engaged on special projects in other departments who desire help in applying statistical methods. Under these circumstances, work may be combined with that taken under Course 20 in such departments. (b) Those who are interested primarily in the field of statistics.

DEPARTMENT OF EPIDEMIOLOGY

JOHN E. GORDON, S.B., PH.D., M.D., A.M. (hon.), F.R.C.P. (Lond.), *Professor of Preventive Medicine and Epidemiology and Head of the Department*

THEODORE H. INGALLS, A.B., M.D., SC.D. (hon.), *Associate Professor of Epidemiology*

A. DANIEL RUBENSTEIN, A.B., M.D., M.P.H., *Associate Clinical Professor of Epidemiology*

THOMAS F. PUGH, M.D., M.P.H., *Assistant Professor of Epidemiology*

CARL E. TAYLOR, S.B., M.D., F.R.C.P. (Canada), DR.P.H., *Assistant Professor of Preventive Medicine and Epidemiology*

F. RANDOLF PHILBROOK, S.B., M.D., M.P.H., *Associate in Epidemiology*

FRANK L. BABBOTT, JR., A.B., M.D., M.P.H., S.M. IN HYG., *Associate in Epidemiology*

ALTON S. POPE, A.B., M.D., DR.P.H., *Lecturer on Epidemiology*

HUGH L. C. WILKERSON, S.B., M.D., M.P.H., *Lecturer on Epidemiology*

JOHN J. POUTAS, A.B., M.D., *Visiting Lecturer on Epidemiology*

FRANCIS B. CARROLL, D.M.D., M.D., M.P.H., *Visiting Lecturer on Epidemiology*

CONRAD WESSELHOEFT, M.D., *Visiting Lecturer on Infectious Diseases*

SCHOOL OF PUBLIC HEALTH

JOHN C. AYRES, S.B., M.D., M.P.H., *Instructor in Epidemiology*

JOHN B. WYON, B.A., M.B.,B.CH., M.R.C.P., M.P.H., *Research Associate in Epidemiology* (Absent 1956-57)

JOAN G. BABBOTT, A.B., M.D., M.P.H., *Research Associate in Epidemiology*

RICHARD A. PRINDLE, M.D., M.P.H., *Research Associate in Epidemiology* (Absent 1956-57)

C. GEORGE TEDESCHI, M.D., *Research Associate in Pathology*

LOUIS WEINSTEIN, S.M., PH.D., M.D., *Lecturer on Infectious Diseases*

Epidemiology is viewed as medical ecology and the diagnostic discipline of mass disease. Multifactorial causation is considered a principle in the origin of mass disease; therefore epidemiology is a multiphasic discipline. It draws upon skills within public health and upon the biological and social sciences.

The epidemiologic method enters into all activities that relate to mass disease, as does diagnosis in clinical medicine. It permits programs to be formed and measures of prevention and control to be instituted, based first on established cause and secondly on the nature of the individual problem. It is an integral part of public health practice, whatever the field of interest, to such extent that epidemiological work in public health is done more by others than by the specialist. As a consequence, all workers in public health need to be familiar with the objectives and methods of epidemiology.

The initial required course, Epidemiology 1b, is limited to demonstration of principle and the applications to which those principles are turned.

Epidemiology 5c is an elective laboratory course on methods of field study of mass disease. Problems from acute and chronic infection provide the basic material for study. This course is for physicians, dentists and veterinarians desiring a second course in epidemiology and a presentation of practical means for solving health problems. Epidemiology 6d, a combined course given with the Department of Public Health Practice, is in logical sequence with Epidemiology 5c, being concerned with the organization of community resources to meet the requirements of specific problems defined epidemiologically.

Epidemiological interests in fields other than the communicable diseases have had increasing attention in recent years. Epidemiology 7d is a laboratory course based on problems of acute and chronic non-infective disease and on mass injury. This course and Epidemiology 5c give experience in epidemiologic method and field procedure.

Course 2c is for students who wish to review current interests in the common communicable diseases of temperate climates. Course 3a,b,c,d is largely clinical and may be elected in one or all periods.

Course 8d is an advanced course primarily for students majoring in biostatistics, microbiology or epidemiology, and Course 9d is for students from

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the military services and for majors in epidemiology or departments of allied interest.

Epidemiology 15 runs throughout the academic year and is designed to give practice through independent and individual effort in applying epidemiologic method to analysis of mass disease. The course is for students preparing for careers in epidemiology, in microbiology, in administrative public health practice, including tropical public health and maternal and child health. Places in the course, limited to ten, ordinarily are allotted these several interests.

Epidemiology 1b. Principles of Epidemiology

Lectures and seminars. *Mondays and Fridays, 11-1, Wednesdays, 11-12, second period.* DR. GORDON and associates.

Credit 2.5 units.

This introductory course outlines the means by which disease of human populations is recognized and by which the multiple factors in causation are evaluated, those which determine origin and also those which govern course and extent. The main concern is therefore with ecologic analysis of mass disease, in terms of environment, host and agent of disease, and according to time and place. This required course is limited to principles, which have developed primarily from knowledge of the communicable diseases. Illustrative examples of the application of these principles to other fields such as nutrition, traumatic injuries, mental disorder, industrial hygiene and chronic degenerative and neoplastic diseases are presented through seminar discussion, to give understanding of the present-day scope of epidemiology and the uses of the epidemiologic method.

Prerequisite: Biostatistics 1a,b.

Epidemiology 2c. Clinical Epidemiology

Lectures, demonstrations, clinics and conferences. *Mondays and Wednesdays, 12-1; Clinics, Fridays, 4-5:30, third period.* DR. INGALLS, DR. WESSELHOEFT, DR. WEINSTEIN.

Credit 1.5 units.

The common acute communicable diseases of temperate climates are presented. Methods of diagnosis, treatment and control are given and the movement of disease in small social groups is studied through analysis of recorded outbreaks within the structure of families, schools, camps, apartment houses, offices, and hospitals.

The course is for physicians who wish to review common communicable diseases with special reference to the problems of the health officer. Epidemiologists, veterinarians, dentists and students of other public health disciplines with demonstrated need for the course are admitted.

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Epidemiology 3a, 3b, 3c, 3d. Clinical Infectious Diseases

Clinics. *Saturdays, 9-11, first, second, third, or fourth periods.* Dr. WEINSTEIN and associates.

Credit .5 unit in each period.

Clinical conferences on the care and management of patients with acute infectious diseases are held weekly by the staff of the Haynes Memorial Hospital. Topics are selected according to available clinical material. Students may attend in one or more periods.

Epidemiology 5c. Practice of Epidemiology

Laboratory exercises, conferences, seminars. *Mondays, Wednesdays and Fridays, 9-12, third period.* DR. RUBENSTEIN, DR. TAYLOR, DR. FRANK BABBOTT.

Credit 3 units.

A laboratory course devoted to the epidemiology of acute communicable diseases. The aim is to provide experience in epidemiologic method through solving problems drawn mainly from current practice. Collection of field data and the analysis and interpretation of results are related to epidemic and endemic situations. Modes of infection are defined and the laws of epidemics examined. Principal sources and reservoirs of infection are studied. The epidemiologic behavior of individual diseases, so chosen as to represent major means of transmission is presented in systematic fashion. Correlation of clinical, field and laboratory procedures is emphasized in the development and evaluation of programs for prevention of infectious disease and the management of epidemics.

Prerequisite: Epidemiology 1b.

Epidemiology 6d. Control of Communicable Disease

Seminars. *Fridays, 9-11, fourth period.* Dr. FEEMSTER and Dr. POPE.

Credit 1 unit.

This course is given jointly with the Department of Public Health Practice. (See Public Health Practice 12d.) Specific problems, partly drawn from Epidemiology 5c, are studied from the administrative standpoint. Attention is centered on elements of control programs according to personnel and facilities available in the given situation. The emphasis is on operational procedure in diagnosis and management of mass disease.

Prerequisite: Epidemiology 5c.

Epidemiology 7d. Non-Infective Mass Disease and Injury

Laboratory exercises, conferences and seminars. *Mondays, 9-12 and Wednesdays, 9-11, fourth period.* DR. INGALLS and associates.

Credit 2 units.

A laboratory course concerned with the origin and behavior of non-infective

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mass disease and injury. The main emphasis is on chronic conditions of degenerative, metabolic and neoplastic nature, and the factors that determine endemic distributions. Congenital anomalies and other disorders of growth and development are a second division. Traumatic mass injury, primarily accidents and chemical intoxications, represents acute conditions. Situations that give aggregation of cases and distributions of epidemic proportions are a further interest. Selected problems illustrate modifications in epidemiological method and procedure applicable to these diseases. Special consideration is given to surveys of incidence and prevalence, to case finding, sources of existing information, and to field methods of acquiring desired data through retrospective and prospective studies.

Prerequisite: Epidemiology 1b.

Epidemiology 8d. Quantitative Method in Epidemiology

Lectures and seminars. *Saturdays, 9-11, fourth period.* Dr. IPSEN.

Credit 1 unit.

This course is designed for students with sound preparation in biology and biostatistics. The principal concern is with theoretical epidemiology and causality of mass disease. Quantitative methods are applied to analysis of the movements of disease in population groups with special consideration of the forces that act to produce epidemics.

Epidemiology 9d. Military Preventive Medicine

Seminars. *Fridays, 11-1, fourth period.* Dr. GORDON and Dr. PHILBROOK.

Credit 1 unit.

A series of seminars, conferences and demonstrations mainly concerned with preventive medicine in the Army, Navy and Air Force, but giving attention to epidemiological activities of the Public Health Service and other national health agencies. Subjects are chosen to illustrate present day problems and the current direction of epidemiologic investigation. The aim is to enlarge, through selected examples from military and other governmental services, the knowledge of epidemiologic principle developed in earlier courses. A methodical or comprehensive presentation of military preventive medicine is not intended.

Epidemiology 15a, b, c, d. Advanced Epidemiology

Seminars. *Wednesdays, 2-4, first and second periods; Wednesdays, 3:30-5:30, third and fourth periods; other time to be arranged.* Dr. GORDON and Dr. TAYLOR.

Credit 1 to 3 units in each period.

An informal tutorial course designed to further a command of the epidemiologic method through individual training and practical experience.

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Each student takes a problem to be developed through field study, laboratory experiment or library investigation as circumstance directs. The problem is first defined, an analysis made of existing epidemiologic facts and an hypothesis constructed. The objective is the design of an experiment to provide an answer. These matters are the subject of seminars whereby the work of the individual is enlarged by group participation. Admission is by permission of the instructor and credit is in proportion to the amount of time devoted to the work. No more than ten students will be accepted.

Epidemiology 20. Research in Epidemiology

Time to be arranged; admission subject to approval of the instructor. Work may be elected with any departmental staff member.

Qualified students are offered the opportunity to undertake special studies in the acute communicable diseases, or in community problems of non-infective processes or injuries. Problems may be assigned or aid provided in developing individual interests.

Epidemiology 30c. Operational Epidemiology

Field visits, January 28–February 2, inclusive. DR. AYRES.

Credit 1 unit.

A week of planned visits in the New York area, limited to field and research activities in epidemiology, and including the Bureau of Preventable Diseases, Bureau of Laboratories, City of New York Department of Health, Public Health Research Institute, Lederle Laboratories, United Nations World Health Organization, Milbank Memorial Fund, American Public Health Association, and State University of New York Medical Center.

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DEPARTMENT OF INDUSTRIAL HYGIENE

PHILIP DRINKER, S.B., CHEM.E., S.D. (hon.), LL.D., A.M. (hon.), *Professor of Industrial Hygiene and Head of the Department*

CONSTANTIN P. YAGLOU, B.A., S.B., M.M.E., A.M. (hon.), *Professor of Industrial Hygiene*

LESLIE SILVERMAN, S.D., *Associate Professor of Industrial Hygiene Engineering*

ROSS A. MCFARLAND, A.B., PH.D., S.D. (hon.), *Associate Professor of Industrial Hygiene*

CHARLES R. WILLIAMS, PH.D., *Associate Professor of Applied Industrial Hygiene*

RICHARD DENNIS, S.M., *Assistant Professor of Industrial Hygiene*

CHARLES E. BILLINGS, S.M., *Assistant Professor of Industrial Hygiene*

JERMYN FRANCIS MCCAHAN, M.D., *Lecturer on Industrial Medicine*

ALLEN SMITH RICHMOND, S.B., *Lecturer on Industrial Hygiene*

MELVIN N. NEWQUIST, A.B., S.B., M.D., *Visiting Lecturer on Industrial Hygiene*

ALLEN D. BRANDT, S.D., *Visiting Lecturer on Industrial Hygiene Engineering*

WILLIAM B. HARRIS, CHEM.E., S.M., *Visiting Lecturer on Industrial Hygiene Engineering*

NATHAN VAN HENDRICKS, S.B., CHEM.E., *Visiting Lecturer on Industrial Hygiene Engineering*

EMMA S. TOUSANT, LL.B., *Instructor in Industrial Hygiene*

WILLIAM D. SMALL, S.M., *Instructor in Industrial Hygiene*

ROLAND C. MOORE, PH.D., *Research Associate in Industrial Hygiene*

EDWARD KRISTAL, S.B., *Research Associate in Industrial Hygiene Engineering*

CHARLES KURKER, JR., S.B., *Research Associate in Industrial Hygiene Engineering*

DAVID M. ANDERSON, S.B., *Research Fellow in Industrial Hygiene*

LESTER H. LEVENBAUM, S.B., *Research Fellow in Industrial Hygiene Engineering*

WILLIAM A. BURGESS, S.M., *Assistant in Industrial Hygiene Engineering*

HARRIET L. HARDY, A.B., M.D., *Assistant Clinical Professor of Preventive Medicine*

ALBERT O. SEELER, A.B., M.D., *Clinical Associate in Medicine*

Industrial Hygiene 1c. Basic Problems in Industrial Hygiene

Lectures and demonstrations. *Mondays and Fridays, 2-4, Wednesdays, 1:30-5, third period.* Professor DRINKER, Dr. SEELER, and associates.

Credit 3 units.

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A course of lectures, demonstrations, and inspections showing the relation of working conditions to health, with special reference to elimination of industrial hazards and prevention and treatment of industrial disabilities and diseases. (Industrial Hygiene 1c and 8d are classified as Eng. 285.)

Industrial Hygiene 2a, b and 2c, d. Industrial Air Analysis

Laboratory work. *Tuesdays and Thursdays, 2-5, all four periods.* Dr. SILVERMAN and Dr. WILLIAMS.

Credit 4 units in each term.

Determination and interpretation of adverse conditions found in work places of all types, such as factories and mills, and in assembly halls; methods employed in determining physical properties of the air, such as temperature, humidity, and air motion; atmospheric impurities and normal constituents of the air — gases, dusts, bacteria, and pollens; efficiencies of protective devices — masks, respirators, mechanical dust-collecting apparatus, hoods, and exhausters; efficiencies of air-conditioning equipment.

Course 2a, b (Eng. 281a) is intended for public health engineers and physicians enrolled in the Industrial Health program. Course 2c, d (Eng. 281b) is a continuation, primarily for students in industrial hygiene.

Industrial Hygiene 3a, 3b, 3c, 3d. Industrial Medical Clinics

Time and credit to be arranged. Dr. McCAHAN, Dr. HARDY, and associates.

Students participate in appropriate clinics at teaching hospitals and in medical clinics of various industries.

Industrial Hygiene 4c. Personnel Administration

Lectures. *Mondays and Wednesdays, 8:30-10, third period.* Mr. RICHMOND.

Credit 1.5 units.

The objectives of this course are to explore various types of industrial and business organizations, to develop an appreciation of the various relations between departmental functions, and to trace the effects of these relations upon the individual worker, the supervisor, the organization itself, and society.

The functions of a medical department as well as its interrelations with other line and staff departments are considered. Special consideration is given to problems in the administration of a medical department where collective bargaining relations exist. These functions, activities, and problems are studied through a series of cases covering employee health, employee safety, rehabilitation, and retirement programs.

Industrial Hygiene 5c. Human Problems of Adjustment in Industry

Lectures and demonstrations. *Mondays, Wednesdays and Fridays, 12-1, third period.* Dr. McFARLAND.

Credit 1.5 units.

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The primary objective of this course is to apply the technics of the various biological sciences to the problems of adjusting workers to their jobs. The initial emphasis is on the selection and placement of workers and the design of equipment to meet human requirements. A study of job requirements is then made to determine the psychologic and physical demands placed upon the worker in achieving successful job placement. With this background, principles are derived for the control of accidents, operational fatigue, and other basic factors influencing efficiency and health. Attention is also given to the problems of gerontology and of workers with physical handicaps. The course is concluded with emphasis on mental and emotional adjustment of workers and factors influencing effective group functioning.

Industrial Hygiene 6c. Industrial Medicine

Lectures and seminars. *Mondays, Wednesdays and Fridays, 10-12, third period.* Dr. McCahan and associates.

Credit 3 units.

This course reviews subjects vital to competent industrial medical practice. These include the organization, administration and functions of an industrial medical program, medico-legal aspects, insurance, rehabilitation, disability evaluation, plant medical records, relation of medical to plant safety, hygiene and sanitation, the small plant problem, industrial nurse functions, relation of trauma to disease, evaluating a plant's medical needs, and methods of program planning. Case studies of various plant medical problems are presented.

Industrial Hygiene 7d. Industrial Hygiene Engineering

Lectures and problems. *Mondays, Wednesdays and Fridays, 2-4, fourth period.* Professor DRINKER and Dr. SILVERMAN.

Credit 3 units.

Control of industrial conditions by engineering methods; field trips, reports, design and operation of equipment. For engineers. (Industrial Hygiene 1c and 7d are classified as Eng. 282.)

Industrial Hygiene 8d. Hygienic Aspects of Ventilation and Air Conditioning

Lectures. *Tuesdays and Thursdays, 8:30-10, fourth period.* Professor YAGLOU.

Credit 1.5 units.

Selected topics in ventilation and air conditioning of interest to students in sanitary engineering and in public health. (Industrial Hygiene 1c and 8d are classified as Eng. 285.)

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Engineering 280. Heating and Air Conditioning

Lectures. *Mondays, Wednesdays and Fridays, 8-9, fall term, at Pierce Hall, Cambridge.* Professor YAGLOU.

The theory and practice of heating and air conditioning. For engineers.

Engineering 286. Aerosol Technology

Lectures and laboratory work. Time and credit to be arranged.

For engineers. Assistant Professor BILLINGS.

Industrial Hygiene 20. Research

A limited number of qualified students will be given an opportunity to do research work in problems of industrial health including occupational disease, toxicology, air cleaning, heating, ventilating, and air conditioning, by arrangement with the head of the Department.

Industrial Hygiene 40d. Human Factors in Industrial Safety

Lectures and seminars. Time and credit to be arranged. Dr. McFARLAND.

Emphasis is placed on the role of human factors in industrial safety. Accident records and statistics in various industries are first analyzed. Different methods of control in relation to the role of human factors in accidents are then considered: (a) the selection and training of workers, (b) the design of equipment, working space, and working methods, (c) the control of environmental influences which impair performance, and (d) maintaining the efficiency of workers through an understanding of temporary conditions from a variety of causes.

Industrial Hygiene 41d. Special Environmental Problems

Lectures and demonstrations. Two hours a week, time to be arranged, in the fourth period. Professor DRINKER and associates.

Credit 1 unit.

This course will cover air pollution as a problem of great cities and of industry, the legal aspects of pollution, the measurement, the physics and dynamics of the atmosphere, micrometeorology and pollution, the use of high stacks, and the design and operation of municipal incineration.

A series of lectures and demonstrations on noise control and evaluation conclude the course.

Industrial Hygiene 44a,b,c,d. Aviation Health and Safety

Seminars. Two hours a week, time to be arranged, in all four periods. Dr. McFARLAND.

Credit 1 unit each period.

The purpose of these seminars is to integrate the work in the basic courses

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of public health and preventive medicine with the specialized problems of aviation health and safety. A series of round table discussions is arranged throughout the year, led by the students, the instructor, and various biological and medical specialists in the University.

Admission is by permission of the instructor.

DEPARTMENT OF MATERNAL AND CHILD HEALTH

HAROLD C. STUART, LITT.B., M.D., A.M. (hon.), *Professor of Maternal and Child Health and Head of the Department*

BERTHA S. BURKE, A.M., *Associate Professor of Maternal and Child Nutrition*

ELIZABETH P. RICE, A.B., S.M., *Associate Professor of Public Health Social Work*

SAMUEL B. KIRKWOOD, A.B., M.D., *Clinical Professor of Maternal Health and Commissioner of Public Health, Department of Public Health of Massachusetts*

PAULINE G. STITT, M.D., M.P.H., *Assistant Professor of Maternal and Child Health*

LEONA BAUMGARTNER, PH.D., M.D., S.D. (hon.), *Visiting Lecturer on Maternal and Child Health*

JOHN F. BELL, A.B., M.D., M.P.H., *Visiting Lecturer on Child Health*

HAROLD JACOBZINER, S.B., M.D., M.P.H., *Visiting Lecturer on Maternal and Child Health*

ELLA LANGER, M.D., *Visiting Lecturer on Maternal and Child Health*

ARTHUR J. LESSER, A.B., M.D., M.P.H., *Visiting Lecturer on Maternal and Child Health*

ROBERT G. RICE, B.A., B.S.C., M.D., C.M., M.P.H., *Instructor in Maternal and Child Health and Director of Division of Maternal and Child Health, Department of Public Health of Massachusetts*

GEORGE KAHN, S.B., M.D., M.P.H., *Instructor in Child Health and Medical Inspector, City of Boston Health Department*

ARDYCE I. SORENSEN, S.M., *Instructor in Maternal and Child Nutrition*

MAURICE M. OSBORNE, JR., M.D., *Instructor in Child Health*

ISABELLE VALADIAN, M.D., M.P.H., *Research Associate in Child Health*

CHARLES A. JANEWAY, A.B., M.D., *Thomas Morgan Rotch Professor of Pediatrics*

WILLIAM T. GREEN, A.M., M.D., *Clinical Professor of Orthopedic Surgery*

CLEMENT A. SMITH, A.M., M.D., *Associate Professor of Pediatrics at the Boston Lying-in Hospital*

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J. ROSWELL GALLAGHER, A.B., M.D., *Lecturer on Pediatrics*
RANDOLPH K. BYERS, M.D., *Assistant Clinical Professor of Pediatrics*
RALPH A. ROSS, A.B., M.D., *Assistant Clinical Professor of Pediatrics*
LENDON SNEDEKER, A.B., M.D., M.P.H., *Instructor in Pediatrics*
EDWARD E. HUNT, JR., PH.D., *Lecturer on Anthropology*
ROBERT J. HAGGERTY, A.B., M.D., *Instructor in Pediatrics*

The public health problems and activities which concern a division of maternal and child health have to do with many fields of science. Some of these relate to the health and welfare of all age groups, but are of particular importance to the infant or the child. Others are problems of early life only, or require special services for these age groups. Still others relate only to the health of women during the childbearing period. Since this range of subjects is very broad, the Department gives little attention to those problems pertaining to health which are more fully considered by other departments of the School. On the other hand, the special problems peculiar to maternity and childhood are considered, even though they may relate to the general fields of other departments. Thus the special aspects of diet during pregnancy and lactation, infant feeding, and diet at succeeding periods of childhood are emphasized. Communicable diseases commonly occurring in childhood are not studied in all aspects, but immunization procedures and environmental control measures particularly applicable in early life are discussed. Administrative procedures for the conduct of special maternal and child health services are given consideration, in close collaboration with the Department of Public Health Practice.

A program of seminars, covering the special problems of maternal and child health, is conducted throughout the academic year; designed primarily for and required of students majoring in this Department. During the first two periods, the problems of maternity, infancy, childhood, and adolescence are dealt with; during the third period, attention is devoted to the regular health services organized to meet these problems and the administrative aspects of these services and in the fourth period, to special programs for selected groups of handicapped children. In addition, students majoring in maternal and child health are required to do individual work, during the third and fourth periods as described under Maternal and Child Health 20 and to take one field trip as described under Maternal and Child Health 30.

The Department offers advanced seminar courses as electives for those who are interested and qualified. In the third period, a course is given in social problems and in the fourth period courses are given in maternal and child nutrition, physical growth and development and in recent advances in obstetrical care.

In addition to the courses required of all students enrolled for the Master

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of Public Health degree, students majoring in maternal and child health are advised to take as many of the following courses as their schedule permits, approval of their selections by the head of the Department concerned being required for some: Public Health Nutrition (first period) or Basic Nutrition (second and third periods) in the Department of Nutrition; Organization of Medical Care (second period), and the general course in Public Health Practice (P.H.P. 10c, d, third and fourth periods) which includes study of the fields of public health administration, health education, public health nursing and social work in health programs.

Clinical demonstrations and field visits will be arranged from time to time in connection with discussions of services, especially in time set aside for individual work in the third and fourth periods. These may be at the Boston Lying-in Hospital, the Children's Medical Center, the Whittier Street Health Center Field Training Unit, or in public or private health agencies in the vicinity. It should be understood, however, that clinical training in obstetrics and pediatrics cannot be provided as part of the curriculum offered by this Department.

All the courses in maternal and child health are organized on a panel or seminar basis, with introductory lectures as required for presentation of material not readily available in the literature. Active student participation in discussions is encouraged and assignments are made of subjects for individual presentation.

BASIC COURSES

(Required of students majoring in the Department)

Maternal and Child Health 1a, b. Basic Problems

Lectures and seminars. *Tuesdays and Thursdays, 2-4, first and second periods.* Dr. STUART, Dr. KIRKWOOD, Mrs. BURKE, Miss RICE, Dr. STITT and Dr. REED.

Credit 4 units.

This course deals first with special problems of maternity in relation to the periods of pregnancy, labor, delivery, and the puerperium, from the standpoints of maternal, fetal, and early infant health. The course then deals with the well child and his nutritional and other requirements for normal growth and health. It considers the social, psychologic, educational and other factors in family and community life which have an important bearing on the mother and the child. It deals further with the relative importance of different causes of death and illness by age and locality and with the progress thus far made in preventing these occurrences. The purpose here is to provide a better understanding of the extent and nature of the leading problems of maternal

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and child health. Familiarity with these subjects is essential for work in this field and is important for those who propose to take the other special courses given by the Department.

Maternal and Child Health 3c, 3d. Services, Programs, and Administration

Lectures and seminars. *Mondays and Wednesdays, 9-11, third and fourth periods.* Dr. STUART, Dr. KIRKWOOD, Miss RICE, Dr. STITT, Dr. RICE, Miss VARLEY, associates and guest lecturers.

Credit 4 units.

This course is designed to provide thorough understanding of the methods of organizing and supervising programs and services to deal with the special problems of maternal and child health at various levels of government and in different types of communities. Administration of programs will be discussed and demonstrations of services afforded whenever circumstances permit. Administrators from the field will participate in the course from time to time as guest lecturers or in panel discussions. Insofar as possible the services will be grouped under the headings of Maternal and Newborn Services, Infant and Pre-school Child Health Services and School Health Services during the third period and Programs for Crippled or Handicapped Children during the fourth period. Each will also be considered in relation to federal, state, and municipal programs, and services in rural areas. Students majoring in Maternal and Child Health will be given opportunities to visit clinics and other services concurrently with these seminars in time set aside for Maternal and Child Health on Thursdays during the third and fourth periods (see 31c and 31d).

Students not majoring in Maternal and Child Health may elect Maternal and Child Health 3c, 3d or 3c or 3d separately. Those majoring in other departments than Public Health Practice should obtain permission from the Head of the Department of Maternal and Child Health.

ADVANCED ELECTIVE COURSES

(For students majoring in the Department or in a field related to the subject of the course)

Maternal and Child Health 5c. Social Problems and Available Social Services for Children

Seminars. *Fridays, 9-11, third period.* Miss RICE and associates.

Credit 1 unit.

This course will cover the historical development of child welfare services, discussions of such problems as foster home and institutional care of children, adoption, illegitimacy, medical neglect, child delinquency, social legislation and organization of community services for children.

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Maternal and Child Health 6d. Maternal and Child Nutrition

Seminars. *Tuesdays, 9-11, fourth period.* Mrs. BURKE, Miss SORENSEN and associates.

Credit 1 unit.

This course is designed primarily for advanced training of students majoring in public health nutrition or in maternal and child health. It deals with the nutritional requirements of pregnancy and lactation, of infancy, and of the preschool and school child and the adolescent. The practical problems involved in fulfilling these needs are discussed from the physiologic, psychologic and socio-economic aspects. Nutrition services in a well-rounded public health program for maternal and child health are discussed.

Maternal and Child Health 7d. Physical Growth and Development

Seminars. *Fridays, 9-11, fourth period.* Dr. STUART and associates.

Credit 1 unit.

This course will explore more fully than Maternal and Child Health 1a, b the aspects of physical growth and development from the fetal through the adolescent periods which are significant in relation to problems of child health and preventive pediatrics. The use and interpretation of physical measurements, roentgenograms and various norms and charts in current use as aids in the assessment of physical status and growth progress will be considered. So also, the clinical evaluation of the child's progress from pediatric, orthopedic and dental points of view and the evaluation of health histories to determine possible causes of poor status or progress will be discussed. Longitudinal data from individual children followed periodically during the developmental period will be studied as clinical examples.

Maternal and Child Health 8d. Recent Advances in Obstetrical Care

Seminars. *Tuesdays, 4-5, clinic time to be arranged, fourth period.* Dr. KIRKWOOD.

Credit 1 unit.

This course consists of informal discussions, demonstrations and ward rounds. It is designed for the student who may have been out of recent contact with clinical obstetrics and gynecology and stresses the important advances in the medical care of the mother, particularly as they relate to the administration of maternal and child health programs.

Maternal and Child Health 20. Special Assignments for Individual Work

This work is designed specifically for students majoring in maternal and child health or a closely related field. It affords these students an opportunity to do individual work for credit under instructor guidance on problems relat-

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ing to this special field. Each program will be arranged in conference between student and instructor and must be accepted in advance by the Head of the Department. In general, such programs will include review of the literature on the subject selected, field observations including some original work, and a paper reporting the work done. Students majoring in maternal and child health are required to have 2 units of credit in this course in each of the third and fourth periods.

Maternal and Child Health 30c and 30d

Field trips for observation of maternal and child health services. Three to five days each, during periods in January and April. Dr. STITT, Miss VARLEY Miss RICE and associates.

Credit 1 unit for each five-day trip.

Students taking these field exercises have opportunities to see programs in operation under Departments of Maternal and Child Health and to participate in discussions with members of these departments regarding practical problems of service and administration. At least one five-day period is required of those majoring in the Department.

Maternal and Child Health 31c and 31d

During the third and fourth periods, group field visits, special clinics and individual field assignments are made on Thursdays for which credit up to one unit per period will be given.

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DEPARTMENT OF MICROBIOLOGY

JOHN C. SNYDER, A.B., M.D., *Professor of Microbiology and Head of the Department*

EDWARD S. MURRAY, A.B., M.D., M.P.H., *Associate Professor of Microbiology and Assistant Medical Adviser to the Department of Hygiene*

JOHANNES IPSEN, C.A., C.M., DR.MED., M.P.H., *Associate Professor of Public Health and Superintendent of the Institute of Laboratories, Massachusetts Department of Public Health*

ROBERT S. CHANG, S.B., M.D., S.D. IN HYG., *Assistant Professor of Microbiology*

SAMUEL D. BELL, JR., A.B., M.D., M.P.H., *Assistant Professor of Microbiology*

HERALD R. COX, A.B., S.D. (hon.), *Visiting Lecturer on Microbiology*

GEOFFREY EDSALL, M.D., *Visiting Lecturer on Microbiology*

RICHARD H. DAGGY, S.M., PH.D., M.P.H., *Visiting Lecturer on Entomology*

GILBERT J. DALLDORF, S.B., M.D., *Visiting Lecturer on Microbiology*

ROBERT B. PENNELL, S.M., PH.D., *Lecturer on Immunology*

JAMES A. McCOMB, D.V.M., *Instructor in Public Health Immunology and Director of Biologic Laboratories, Department of Public Health of Massachusetts*

JOHN M. NEWELL, A.B., S.D., *Instructor in Public Health Immunology*

CATHARINE ATWOOD, A.B., *Instructor in Public Health Bacteriology*

MARIO L. TARIZZO, M.D., D.T.M., *Research Associate in Microbiology*

DOROTHY E. McCOMB, S.B., *Assistant in Microbiology*

JOHN W. VINSON, S.B., *Assistant in Microbiology*

ROBERT A. MACCREADY, S.B., M.D., *Associate in Bacteriology and Immunology and Assistant Director of Diagnostic Laboratories, Department of Public Health of Massachusetts*

The students in the School of Public Health may be considered in three categories as regards their previous training in microbiology.

(a) *Students who have had satisfactory previous instruction but who have not had extensive experience in the field.* Most of the candidates for the degree of Master of Public Health belong in this group. The regularly scheduled courses in microbiology in the School of Public Health are designed primarily for these students.

(b) *Students whose background in microbiology is negligible.* In this group are those students whose previous instruction was received many years before their matriculation in the School of Public Health, and whose activities have not brought them into contact with the developments in bacteriology. Also

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in this group are the students whose previous instruction was incomplete or unsatisfactory for various reasons. This group is advised to take a basic course in bacteriology and immunology such as Bacteriology 201, Harvard Medical School, or Sanitary Engineering 2a, b (Sanitary Bacteriology) given by the Department of Sanitary Engineering, or a similar course elsewhere.

Candidates for the degree of Master of Public Health who fall in this category are required to complete a basic course in medical or sanitary bacteriology before they may receive their degrees.

(c) *Students who have had extensive experience and who are familiar with the principles and standard methods.* Several opportunities for advanced study and research are available for the students in this category. By arrangement with the Massachusetts Department of Public Health, students may study in the Institute of Laboratories, which includes the Biologic Laboratories, the Wassermann Laboratory, and the Diagnostic Laboratory. Courses in various aspects of sanitary bacteriology are given by the Department of Sanitary Engineering. Suitably qualified students may wish to take one or more of the courses in advanced bacteriology which are described in detail in the official register of the Division of Medical Sciences of the Graduate School of Arts and Sciences.

Microbiology 1a, b. Principles of Bacteriology and Immunology

Lectures and demonstrations. *Tuesdays and Thursdays, 9-10, first and second periods.* Department Staff.

Credit 2 units.

This course considers the bacteria, viruses and rickettsiae which are pathogenic for man. The principles of bacteriology and immunology are discussed in relation to the problems of public health with emphasis on recent developments. The course is designed particularly for students who will be concerned with communicable diseases.

Prerequisite: Medical or sanitary bacteriology.

Microbiology 2c, d. Current Research in Microbiology

Thursday, 12-1, third and fourth periods. DR. SNYDER.

Credit 1 unit.

This course is arranged for the students who are concentrating in microbiology. Important papers from current periodicals on topics of general interest are assigned to the students for presentation. These papers are considered critically in respect to evaluation of the experimental work, analysis of the results, organization of the manuscripts, and clarity of presentation.

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The purpose of the course is to develop the ability of the students to read the literature analytically and to plan their own work and manuscripts effectively.

Prerequisite: Microbiology 1a, b or equivalent previous instruction.

Microbiology 11b. Public Health Laboratory Procedures

Lectures, seminars, and laboratory exercises. *Tuesdays and Thursdays, 2-5, Wednesdays, 12-1, and two hours per week individual laboratory work, second period.* Dr. MURRAY, Dr. CHANG, and Dr. BELL.

Credit 3 units.

This course considers briefly the standard laboratory technics and includes recent methods for study of representative rickettsiae and viruses. It is designed for students who are likely to be involved in various relations with public health laboratories.

Technics used in serology and bacteriology are demonstrated and short exercises illustrate the important principles of the tests. In the portion of the course devoted to rickettsiae and viruses the students themselves inoculate embryonated eggs and animals by various routes, prepare diagnostic antigens, and perform neutralization tests and red cell agglutination tests.

Limited to fourteen students who have completed Microbiology 1a.

Microbiology 12a, 12c, d. Biological Products in Public Health

Seminars and laboratory demonstrations at the Institute of Laboratories of the Massachusetts Department of Public Health. Dr. IPSEN, Dr. McCOMB, and Dr. NEWELL.

Credit 1 unit first period; 2 units third and fourth periods.

In Course 12a, technics for production of biological products used in public health are demonstrated. Seminar discussions deal with the practical importance of biologics in control of communicable disease and their appropriate uses. *Tuesdays, 2-3:30.*

Course 12c, d, is devoted to principles and practices in the design and biometric analysis of experiments in microbiology in relation to official potency tests, to other types of biological standardization, and to field assays of biologics in human populations. Time to be arranged.

Enrollment for 12a or 12c, d, separately is acceptable.

Opportunities are offered properly qualified students for original work at the Institute in problems of Public Health Immunology with credit for Course Microbiology 20 to be arranged with the Head of the Department.

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Microbiology 13c. Rickettsial and Viral Diseases of Public Health Importance

Lectures, laboratory exercises, and seminars. *Mondays and Wednesdays, 2-5, third period, and four hours per week individual laboratory work.* Drs. CHANG, BELL, and MURRAY.

Credit 3 units.

The purpose of this course is to teach the basic principles involved in the technics for laboratory study of certain rickettsiae and viruses which are of interest to public health workers. The course consists of lectures, seminars, supervised individual work, and laboratory exercises. The latter include methods for identification of representative species of rickettsiae and viruses of public health importance by the use of tissue culture, animal inoculation, and serologic technics.

The arthropods which are vectors or reservoirs of the major viral and rickettsial diseases are briefly considered at appropriate points in the exercises.

The course is planned as a basic preparation for those who will be involved in investigations of rickettsiae or viruses either in the laboratory or the field.

Limited to ten students who have completed Microbiology 11b or who have had equivalent previous preparation.

Microbiology 15a, b, c, d. Problems in Serology

Laboratory exercises. Time and credit to be arranged. Dr. MURRAY and Dr. CHANG.

Laboratory exercises on certain phases of current serologic technics are offered to students who have had adequate previous laboratory experience.

Prerequisite: Microbiology 11b, or the equivalent.

Microbiology 20. Research

Students who have had adequate experience in microbiology may do research in the laboratories of the Department. Time and credit to be arranged with the head of the Department.

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DEPARTMENT OF NUTRITION

FREDRICK J. STARE, S.M., PH.D., M.D., A.M. (hon.), *Professor of Nutrition and Head of the Department*

DAVID M. HEGSTED, S.M., PH.D., *Associate Professor of Nutrition*

ROBERT P. GEYER, S.M., PH.D., *Associate Professor of Nutrition*

JEAN MAYER, B.A., PH.D., D.SC., *Associate Professor of Nutrition*

MARTHA F. TRULSON, S.B., M.P.H., S.D. IN HYG., *Assistant Professor of Nutrition*

THEODORE B. VAN ITALLIE, S.B., M.D., *Assistant Professor of Clinical Nutrition*

STEPHEN B. ANDRUS, S.B., M.D., *Assistant Professor of Pathology*

STANLEY N. GERSHOFF, A.B., S.M., PH.D., *Assistant Professor of Nutrition*

OSCAR W. PORTMAN, S.B., M.D., *Associate in Nutrition*

JOSEPH J. VITALE, S.M., S.D. IN HYG., *Associate in Nutrition*

RENA R. HASKER, S.B., A.M., *Instructor in Nutrition*

ELIZABETH K. CASO, S.M., *Instructor in Nutrition*

MADGE L. MYERS, A.B., S.M., *Instructor in Nutrition*

MARY B. McCANN, S.B., M.P.H., *Instructor in Nutrition*

F. RUSSELL OLSEN, A.B., *Research Associate in Nutrition*

ROBERT T. SCHOLES, S.B., M.D., D.T.M. & H., *Research Associate in Nutrition* (Absent 1956-57)

CARLOS COLLAZOS, M.D., M.P.H., *Research Associate in Nutrition* (Absent 1956-57)

ELEANOR Y. LAWRY, S.B., PH.D., *Research Associate in Physics*

THOMAS R. DAVIS, M.B., CH.B., D.T.M. & H., M.P.H., *Research Associate in Nutrition* (Absent 1956-57)

JAMES A. ANLIKER, S.M., PH.D., *Research Associate in Nutrition*

MARY Q. BOLLIGER, A.B., S.M., PH.D., *Research Associate in Nutrition*

LOUIS C. FILLIOS, A.B., S.D. IN HYG., *Research Fellow in Nutrition*

ETHEL J. BOWIE, S.B., *Assistant in Nutrition*

A. BAIRD HASTINGS, S.B., PH.D., S.D. (hon.), *Hamilton Kuhn Professor of Biological Chemistry*

JAMES H. SHAW, S.M., PH.D., *Associate Professor of Biological Chemistry in the School of Dental Medicine*

WILLIAM R. WADDELL, S.B., M.D., *Clinical Associate in Surgery*

IRA GORE, A.B., M.D., *Clinical Associate in Pathology*

SCHOOL OF PUBLIC HEALTH

NORMAN ZAMCHECK, A.B., M.D., *Instructor in Medicine*

CHARLES DE WAN, M.D., *Instructor in Pathology*

WADI ANTONIO BARDAWIL, B.S.C., M.D., *Instructor in Pathology*

Nutrition 1a. Public Health Nutrition

Lectures. *Mondays, Wednesdays and Fridays, 9-10, first period.* Dr. STARE and associates.

Credit 1.5 units.

This course deals with the practical application of the science of nutrition to the problems of human nutrition, especially in the field of public health. Dietary requirements are considered in their relation to growth, development, disease, pregnancy, lactation, and the formation and maintenance of dental structures. Methods for establishing the minimum and optimum nutritional requirements, together with the problems of meeting these requirements, especially for low income groups, are discussed. The purposes and value of nutrition surveys are discussed along with methods of procedure and evaluation of measurements obtained. The place of the nutritionist in the public health program is considered and various fields of a well-rounded nutrition service are discussed as it correlates with the activities of health, welfare, educational, and industrial organizations. The effect of various environmental, social, economic, and psychologic factors upon food habits is also studied as these factors influence the nutritional status of an individual or group of people. The consequences of nutritional deficiencies and the relation of optimum nutrition to national and international health and economy are discussed. The nutritional problems of relief, rehabilitation, famine, and other emergencies are dealt with. The relation of production, distribution, and preparation for the best use of foods is discussed, as are also the problems of food enrichment and fortification.

Nutrition 2b, c. Biochemistry and Physiology of Nutrition

Lectures. *Tuesdays, Thursdays and Saturdays, 9-10, second period; Tuesdays and Thursdays, 12-1:30, third period; and three hours per week, time to be arranged with the instructors.* Dr. HEGSTED and Dr. MAYER.

Credit 4.5 units.

This course deals with the fundamentals of the chemistry and physiology of nutrition. The chemistry, function, and metabolism of carbohydrates, fats, proteins, vitamins and essential minerals are considered. The course is planned for those specializing in nutrition and who have adequate training in biochemistry and physiology.

Prerequisite: Organic and biological chemistry, physiology, and consent of instructors.

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Nutrition 3c, d. The Laboratory Basis of Nutrition

Lectures and demonstrations. *Fridays, 10-12, third period; Fridays, 11-1, fourth period.* Dr. GEYER.

Credit 2 units. Additional credits can be arranged for those desiring extra laboratory instruction.

This course is a survey of methods pertinent to experimental nutrition. The material covered includes biophysical and chemical technics used in nutritional studies in animal and human experimentation. Students participate in the preparation and presentation of such general topics as chromatography, spectroscopy, microbiological assay, manometric measurements, and purified diet technics. They are then instructed in the actual laboratory procedure pertaining to these technics.

Prerequisites: A basic course in biochemistry and consent of instructor.

Nutrition 4c. Dietary Evaluation

Lectures and laboratory exercises. *Wednesdays, 11-1, third period.* Dr. TRULSON.

Credit 1 unit.

Methods for obtaining a diet history are discussed and illustrated. The origins, accuracy, and use of food composition tables are considered and their use in translation of the diet history into equivalent food values is illustrated. The principles of nutritional surveys and studies for public health programs and clinical researches are discussed. Laboratory work will consist of practical exercises in evaluating diets and surveys.

Nutrition 5d. Human Nutritional Disease

Lectures. *Mondays, 12-1, Wednesdays, 3-5, fourth period.* Dr. VAN ITALLIE.

Credit 1.5 units.

This course is concerned with (a) nutritional aspects of internal medicine and surgery, (b) the clinical manifestations of nutritional diseases, and (c) the use of nutrients in therapy and supportive care. Consideration is given to such special topics as assessment of nutriture, nutritional survey technics, and obesity. Arrangements can be made for members of the class who are interested to visit various Boston hospitals to study illustrative clinical problems at the bedside.

Nutrition 6a, 6b. Nutrition Seminar

Seminars. Time to be arranged, first and second periods. Dr. GERSHOFF and Staff of the Department.

Credit .5 unit in each period.

Brief discussions of classical literature in fundamental and applied nutrition.

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Admission limited and subject to the approval of the instructor. In addition, a journal club covering current literature and organized with the participation of the students meets informally on a day to be announced later.

Nutrition 7c, 7d. Advanced Topics in Nutrition

Seminars. Time to be arranged, third and fourth periods. Dr. GERSHOFF and Staff of the Department.

Credit .5 unit in each period.

Properly qualified students present a topic followed by discussion.

Prerequisites: Nutrition 2b and consent of instructor.

Nutrition 20. Individual Research or Study

Time (at least two half-days per week) and credit to be arranged. Staff of the Department.

Facilities are available for advanced work in nutrition along the lines of fundamental research or applied nutrition in public health and medicine.

Admission limited and subject to approval of the instructor.

DEPARTMENT OF PHYSIOLOGY

JAMES L. WHITTENBERGER, S.B., M.D., *Professor of Physiology and Head of the Department*

STANLEY J. SARNOFF, A.B., M.D., *Associate Professor of Physiology* (Absent 1956-57)

JERE MEAD, S.B., M.D., *Associate Professor of Physiology*

WILLIAM H. FORBES, DR. PHIL., M.D., *Lecturer on Physiology*

BENJAMIN G. FERRIS, JR., A.B., M.D., *Assistant Professor of Physiology*

ERIK BERGLUND, A.B., M.D., *Associate in Physiology*

WILLEM S. FREDERIK, M.D., S.M. IN HYG., *Lecturer on Physiology*

DAVID B. DILL, S.B., PH.D., *Visiting Lecturer on Physiology*

AUSTIN F. HENSCHEL, S.B., PH.D., *Visiting Lecturer on Physiology*

MARY O. AMDUR, S.B., PH.D., *Research Associate in Physiology*

HARBEN J. BOUTOURLINE-YOUNG, M.B., B.S., M.D., *Research Associate in Physiology* (Absent 1956-57)

N. ROBERT FRANK, A.B., M.D., *Research Associate in Physiology*

ROBERT DENTON, A.B., M.D., *Research Associate in Physiology*

GUNTHER LUDWIG SCHREINER, M.D., *Research Fellow in Physiology*

ROBERT G. MONROE, A.B., M.D., *Research Fellow in Physiology*

CHARLES D. COOK, A.B., M.D., *Associate in Pediatrics*

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Physiology 1a,b. Human Physiology and Its Applications to Public Health

Lectures and demonstrations. *Tuesdays and Thursdays, 1-2, first and second periods.* Dr. WHITTENBERGER and associates.

Credit 2 units.

A course in human physiology, with particular emphasis on aspects which are of importance in specific public health problems. The course is designed primarily for students of engineering science; it is recommended also to those who need additional physiologic background for work in other fields. The course is prerequisite to Physiology 2c for those who lack adequate training in physiology.

Physiology 2c. Environmental Physiology

Lectures and conferences. *Tuesdays and Thursdays, 12-1, third period.* Dr. WHITTENBERGER and associates.

Credit 1 unit.

This course is designed to supplement the physiologic aspects of Environmental Hygiene 1b. Subject matter will include physical fitness, exercise and work under various environmental conditions, and performance as related to age, nutrition, and state of health. Energy cost and efficiency will be related to different kinds of activities in industry. Special attention will be given to respiratory effects of atmospheric contamination and the assessment of respiratory function.

Physiology 20. Research in Physiology

Properly qualified students are given opportunities to work in the laboratory provided they can devote an acceptable amount of time to such work.

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF PUBLIC HEALTH PRACTICE

HUGH R. LEAVELL, S.B., M.D., DR.P.H., *Professor of Public Health Practice and Head of the Department* (Absent until April 1, 1957)

W. FRED MAYES, S.B., M.D., M.P.H., *Associate Professor of Public Health Practice and Acting Head of the Department*

FRANZ GOLDMANN, M.D., *Associate Professor of Medical Care*

LEONID S. SNEGIREFF, M.D., DR.P.H., *Associate Professor of Cancer Control*

GERALD CAPLAN, B.SC., M.B., CH.B., M.D., *Associate Professor of Mental Health*

BENJAMIN D. PAUL, A.B., PH.D., *Associate Professor of Social Anthropology*

HELEN L. ROBERTS, A.B., M.D., M.P.H., *Lecturer on Public Health Practice*

ROBERT H. HAMLIN, A.B., M.D., M.P.H., LL.B., *Lecturer on Public Health Law and Assistant Professor of Legal Medicine; Health Officer, Town of Brookline*

ALFRED L. FRECHETTE, M.D., M.P.H., *Assistant Professor of Public Health Practice and Director, Health, Hospital and Medical Care Division, United Community Services of Metropolitan Boston*

NORBERT A. WILHELM, S.B., M.D., *Assistant Professor of Public Health Practice and Director, Peter Bent Brigham Hospital*

BERYL J. ROBERTS, ED.M., M.P.H., *Assistant Professor of Health Education*

MARGARET L. VARLEY, S.B., M.P.H., *Assistant Professor of Public Health Nursing*

WARREN T. VAUGHAN, JR., S.B., M.D., *Assistant Professor of Mental Health and Director, Division of Mental Hygiene, Massachusetts Department of Mental Health*

ROY F. FEEMSTER, A.B., M.D., DR.P.H., *Assistant Professor of Public Health Practice and Director, Division of Communicable Diseases, Department of Public Health of Massachusetts*

JOHN H. CAULEY, M.D., M.P.H., *Lecturer on Public Health Practice and Commissioner of Public Health, City of Boston Health Department*

FREDERICK L. W. RICHARDSON, JR., S.B., PH.D., *Lecturer on Human Relations*

CLAIRE F. RYDER, A.B., M.D., M.P.H., *Lecturer on Gerontology*

OZZIE G. SIMMONS, S.B., PH.D., *Lecturer on Social Anthropology*

WILLIAM S. FLASH, PH.D., *Lecturer on Public Administration*

HARRY T. PHILLIPS, M.B., CH.B., D.P.H., *Lecturer on Public Health Practice*

EDWIN F. DAILY, M.D., *Visiting Lecturer on Medical Care*

HOWARD A. RUSK, A.B., M.D., S.D. (hon.), *Visiting Lecturer on Public Health Practice*

DEAN W. ROBERTS, A.B., M.D., M.P.H., *Visiting Lecturer on Medical Care*

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- GEORGE ROSEN, S.B., M.D., PH.D., M.P.H., *Visiting Lecturer on Medical Care*
- HERBERT L. LOMBARD, A.B., M.D., M.P.H., *Instructor in Public Health Practice and Director, Division of Cancer and Other Chronic Diseases, Department of Public Health of Massachusetts*
- ROBERT E. ARCHIBALD, M.D., M.P.H., *Instructor in Public Health Practice and Deputy Commissioner, Department of Public Health of Massachusetts*
- FRANKLYN B. AMOS, M.D., M.P.H., *Instructor in Public Health Practice*
- CLARENCE I. STERLING, S.B., *Instructor in Public Health Practice and Deputy Commissioner of Health, Department of Public Health of Massachusetts*
- KENNETH I. E. MACLEOD, M.B., CH.B., M.P.H., *Instructor in Public Health Practice*
- ELIZABETH B. HAGER, A.B., N.M., A.M., *Instructor in Public Health Nursing*
- OLIVE M. LOMBARD, B.SC., S.M. IN HYG., *Instructor in Public Health Practice*
- DONALD C. KLEIN, A.B., PH.D., *Instructor in Mental Health*
- ARTHUR C. K. HALLOCK, A.B., *Instructor in Mental Health*
- EDWARD A. MASON, A.B., M.D., *Instructor in Mental Health*
- LEONARD S. ROSENFELD, S.B., M.D., M.P.H., *Instructor in Medical Care*
- BELLENDEN R. HUTCHESON, B.SC., M.B., M.D., *Instructor in Mental Health*
- LEON STERNFELD, S.B., M.D., PH.D., M.P.H., *Instructor in Public Health Practice and Health Officer of Cambridge*
- SIDNEY S. LEE, S.B., M.D., DR.P.H., *Instructor in Public Health Practice and Assistant Director, Beth Israel Hospital*
- PEARL P. ROSENBERG, PH.D., *Instructor in Mental Health*
- A. PAUL HARE, S.B., PH.D., *Instructor in Mental Health*
- BESSIE S. DANA, A.B., S.S.M., *Instructor in Public Health Social Work*
- KATHERINE SPENCER, PH.D., *Research Associate in Public Health Practice*
- LENA M. DICICCO, A.B., S.M., *Research Associate in Health Education*
- NAOMI C. TURNER, A.B., ED.M., *Research Associate in Dental Public Health*
- BARBARA AYRES, A.M., *Research Associate in Mental Health*
- STANLEY H. CATH, S.B., M.D., *Research Associate in Mental Health*
- LEOTA L. JANKE, PH.D., *Research Associate in Public Health Practice*
- HERBERT NABOISEK, S.B., A.M., PH.D., *Research Associate in Public Health Practice*
- JOHN G. MCCORMICK, S.M., *Research Associate in Health Education*
- RALPH R. NOTMAN, B.A., M.D., C.M., *Research Associate in Mental Health*
- NATHAN H. GOULD, PH.D., *Research Associate in Mental Health*
- HAROLD S. ZAMANSKY, S.B., PH.D., *Research Associate in Public Health Practice*
- ALFRED E. GOLDMAN, S.B., PH.D., *Research Associate in Public Health Practice*

SCHOOL OF PUBLIC HEALTH

- MARY D. HAZEN, A.B., M.P.H., *Research Associate in Health Education*
AVEDIS DONABEDIAN, A.B., M.D., M.P.H., *Research Associate in Medical Care*
DOROTHY M. MATHEWS, A.B., S.S.M., *Research Associate in Public Health Social Work*
HILDA ROSENBLUM, PH.D., *Research Associate in Economics*
MARIE G. MCCONNELL, *Assistant in Public Health Practice*
HARRIET S. PFISTER, A.M., *Assistant in Public Health Practice*
LEON J. TAUBENHAUS, A.B., M.D., M.P.H., *Assistant in Public Health Practice and Assistant Health Officer, Town of Brookline*
FRANCES M. HEALD, A.B., S.M., S.M. IN HYG., *Assistant in Public Health Social Work*
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- ERICH LINDEMANN, PH.D., M.D., *Professor of Psychiatry*
SHIELDS WARREN, A.B., M.D., S.D. (hon.), LL.D., *Professor of Pathology at the New England Deaconess Hospital*
DEAN A. CLARK, B.A., B.S.C., M.D., *Clinical Professor of Preventive Medicine and General Director of the Massachusetts General Hospital*
PAUL K. LOSCH, D.D.S., *Associate Professor of Pediatric Dentistry at the Children's Hospital*
JAMES M. DUNNING, A.B., D.D.S., M.P.H., *Lecturer on Public Health Dentistry, Harvard School of Dental Medicine*
CECIL G. SHEPS, M.D., M.P.H., *Lecturer on Preventive Medicine, Harvard Medical School, and Executive Director, Beth Israel Hospital*
WILLIAM J. CURRAN, LL.M., *Lecturer on Law, Department of Legal Medicine, Harvard Medical School (Associate Professor of Law, Boston College Law School)*
LEMOYNE WHITE, A.B., M.D., *Instructor in Psychiatry*

The Department of Public Health Practice is working toward specific objectives in the three broad areas of education, research and community service. In education the Department seeks:

(a) To develop leaders in administration who will be prepared to study objectively and deal effectively with the changing administrative problems of the future. Such leaders should be competent to organize and administer programs for service, education, research or a combination of these activities.

(b) To educate leaders in the content and administration of special fields of public health for which the Department has particular responsibility. At

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present these include the following fields: chronic disease control and gerontology, dental public health, health education, medical care administration, mental health, public health law, public health nursing, public health social work and rehabilitation.

(c) To provide opportunities for specialists majoring in other departments of the School to develop an appreciation of the relationships between their own special field, public health as a whole, and the communities in which they will work.

(d) To provide a background in the concepts and research methods of the behavioral sciences for those students whose future activities will require their close cooperation with experts in the various behavioral sciences.

In research the Department seeks to stimulate and carry on research in the special fields of public health for which the Department is responsible. This includes the areas in which health and the behavioral sciences have important interfaces, as well as comparative studies of administrative problems and methods in different parts of the world, with the purpose of finding principles of broad applicability.

It is the Department's objective to provide consultation and community service to the extent that is consistent with the development and maintenance of a strong educational and research program.

Public Health Practice 1b. Principles of Public Health Practice

Seminars and conferences. *Mondays, Wednesdays and Fridays, 9-11, second period.* Dr. LEAVELL and associates.

Credit 3 units.

An introduction to public health practice in which the principles of understanding people, of administrative organization, personnel management, financing of health services and public health law are presented as the basis of public health administration.

Special consideration is given to the work of the various members of the public health team, and to the types and inter-relationships of the official and voluntary agencies in which they work.

Maternal and child services involve many members of the health team, and they are needed in all parts of the world. Therefore, examples of such services receive special emphasis.

Public Health Practice 2b. Organization of Medical Care

Lectures and discussions. *Tuesdays and Thursdays, 11-1, second period.* Dr. GOLDMANN.

Credit 2 units.

An orientation course on the development and present state of medical-care programs organized under the auspices of public and voluntary agencies. Dis-

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cussion of the resources in medical and related personnel, and in hospitals, clinics, and custodial institutions; of the utilization of existing services and the cost of medical care; and of the basic methods of organizing and paying for professional and hospital services. Description of tax-supported medical-care programs administered by local, state, and federal agencies and of voluntary prepayment plans of various types.

Public Health Practice 3b. Psychosocial Problems

Lectures and seminars. *Wednesdays, 2-4, second period.* Dr. CAPLAN and associates.

Credit 1 unit.

This course is concerned with the study of abnormal behavior resulting in social problems and with the mechanisms which produce abnormal mental reactions. It includes a series of discussions dealing with factors in individual, physical, and psychological development; family relationships; and the social structure of the community, which contribute to the causation of psychological disorder.

Public Health Practice 4a. Control of Cancer and Other Chronic Diseases

Lectures and discussions. *Tuesdays and Thursdays, 2-4, first period.* Dr. SNEGIREFF.

Credit 2 units.

Cancer control is discussed from the viewpoint of the administrator. Authorities in the various aspects of the cancer control program discuss specific phases of the problem. Discussion periods are arranged to supplement lectures and to give the administrator a balanced view of the cancer field in relation to other chronic diseases.

Public Health Practice 5a,b,c,d. Community Health Education

Seminars. *Wednesdays, 2-4, first period; Tuesdays, 11-1, second period;* time to be arranged, third and fourth periods. Miss ROBERTS and associates.

Credit 6 units.

Comprehensive discussion of the methods and materials of public health education. Includes also a consideration of social science concepts relevant to health education.

Intended especially for students with a major interest in health education.

Public Health Practice 6c,d. School Health Education

Seminars. Two hours a week, time to be arranged, during the third and fourth periods. Miss ROBERTS and associates.

Credit 2 units.

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Study of the educational aspects of the school health program and the place of the schools in community health education.

Intended especially for students with a major interest in health education.

Public Health Practice 7c, d. Dental Public Health Practice

Conferences, seminars, and field study. Time and credit to be arranged. Dr. DUNNING and associates.

This course is designed particularly for dentists.

Emphasis is laid on the application of such sciences as epidemiology and biostatistics to dental problems and upon public health administration in the dental field.

Opportunities for clinical experience are available at the Harvard School of Dental Medicine under certain circumstances.

Public Health Practice 8c,d. Legal Problems of Organized Health Service

Seminar. Two hours a week, time to be arranged, during the third and fourth periods. Dr. HAMLIN and Mr. CURRAN.

Credit 2 units.

The Seminar is primarily designed for those who are or who may become administrators and policy-makers including health officers, nurse supervisors, medical care personnel, sanitary engineers, or other similar personnel, in public or private agencies. Seminars will include discussions on: (a) utilization of the law in implementing health programs; (b) the liability of health personnel and health organizations in the operation of their programs; (c) the development and comparison of legal and medical standards of practice, particularly how these standards on a legal basis may be used to increase and maintain the quality of health programs; (d) the theory and operation of grants-in-aid; (e) the preparation and presentation of medical evidence for hearings, court procedures, etc.; (f) the legal problems of disease control, and (g) various legal and administrative forms of health practice.

Public Health Practice 9c,d. Mental Health Problems

Seminars. *Tuesdays, 2-4, third and fourth periods.* Dr. CAPLAN and associates.

Credit 2 units.

Mental health problems, such as control of delinquency, mental disease, psychoneurosis, and psychosomatic disorders are reviewed, both from the point of view of the clinic and of community resources. An effort then is made to outline a program for community mental health, including the problems involved in the efforts of public agencies and voluntary groups.

Prerequisite: Public Health Practice 3b.

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Public Health Practice 10c,d. Public Health Administration, Health Education, Public Health Nursing and Social Work in Health Agencies

Seminars and field study, *Mondays, Wednesdays and Fridays, 2-4, third and fourth periods.* Dr. LEAVELL and associates.

Credit 6 units.

Practical application of public health practice principles is developed through problem centered seminars. Each student is assigned to a small group to study a broad and current public health problem, and works with a seminar leader and various specialists. Particular attention is given to the health education role of each member of the team, nursing and social work activities. The necessity for teamwork is demonstrated. The broad aspects of public health administration and reports on each problem are discussed critically by the class in general sessions.

Public Health Practice 30c, d should be taken in connection with this course to provide opportunities for field study.

Prerequisite: Public Health Practice 1b.

Public Health Practice 11c,d. Administration of Medical-Care Programs

Seminars, field observations, and exercises. *Tuesdays and Thursdays, 11-1, third period; Tuesdays, 11-1, and Thursdays, 10-1, fourth period.* Dr. GOLDMANN.

Credit 4.5 units.

An advanced seminar enlarging on the basic subject matter presented in Public Health Practice 2b, Organization of Medical Care. Discussion of the basic principles and problems of sound administrative organization of medical-care programs. Study of the administrative practices actually followed by public agencies in charge of tax-supported services and by voluntary agencies administering prepayment plans for hospital care, physicians' service, or both. Discussion of the technics of surveying and appraising medical-care needs and medical-care programs, including consideration of proper employment of statistical methodology. Analysis of the experience gained in the operation of various types of tax-supported and insurance plans. Visits to selected medical-care facilities and to administrative agencies, public and voluntary. Supervised studies of typical organizations.

Prerequisite: Public Health Practice 2b.

Public Health Practice 12d. Control of Communicable Disease

Seminars. *Fridays, 9-11, fourth period.* Dr. FEEMSTER and Dr. POPE.

Credit 1 unit.

This course is given jointly with the Department of Epidemiology. (See Epidemiology 6d.) Epidemiologic study of a disease problem is basic to its control; therefore Epidemiology 5c is a prerequisite. Specific problems and

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situations are studied from the administrative standpoint in this course. Attention is centered on elements of control programs desirable with personnel and facilities available in the given situations under study.

Prerequisite: Epidemiology 5c.

Public Health Practice 20. Special Assignments

Advanced students are offered the opportunity to undertake studies in the practice of organized health services. The student must have completed Biostatistics 1a,b and Public Health Practice 1b before registering for this work. Time and credit arranged on an individual basis. Examples of types of assignments follow:

Cancer Control Practice

Dr. SNEGIREFF

Primarily for physicians. Advanced problems in administration of cancer control programs of official and voluntary health agencies at national, state, and community levels, and the development of special studies directed toward educational methodology in teaching cancer etiology and control measures.

Observation and field study in cancer clinics and related facilities.

Prerequisite: Public Health Practice 4a.

Family and Community Case Studies

Eight sessions, one half day a week, in the second, third or fourth periods. Dr. PHILLIPS and associates.

Credit 1 unit in each period.

Through a study of a family's social and health needs, a limited number of students, under guidance, will have an opportunity to interview a family and review reports of social and health agencies which have provided services to the family. The purpose of the course is to determine the family's problems and the degree to which the community's services of health and welfare were effective in helping the family to meet these problems. Gaps, duplications, and problems in coordination of services will be clarified and suggested ways of meeting the needs proposed.

Veterinary Public Health Practice

Primarily for veterinarians. Individual work to be arranged.

Comparative Health Administration-Design for Research

Time and credit to be arranged, in the third and fourth periods. Dr. FLASH and guest leaders.

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The purpose will be to assess and apply research methods in comparative health administration. An attempt will be made to frame and evaluate research designs in finding common methods, criteria and/or principles of health administration between varied countries and cultures.

Studies of Medical Care Agencies

Dr. GOLDMANN.

Prerequisite: Public Health Practice 2b.

FIELD STUDY IN PUBLIC HEALTH PRACTICE

Public Health Practice 30c, d. Field Observation

Thursdays, 2-5, third and fourth periods. Credit to be arranged.

These periods are designed to provide opportunity for field observations, individual field studies, and seminar discussions in health service administration, public health nursing, social work and health education. Students majoring in Public Health Practice or those electing either Public Health Practice 10c, d or 11c, d are required to register for this course, and may earn one or more units of credit.

Public Health Practice 31c, d. Assignments to Field Agencies

January 28-February 2, April 1-6.

Credit 1 unit for each week.

Assignments for continuous periods to health departments or voluntary health agencies (1) To observe activities of the various subdivisions, work of the administrator or other specialized administrative personnel, and community relationships, or (2) To make group surveys or studies of community health services under the supervision of staff members of the Department of Public Health Practice.

Offered in conjunction with Public Health Practice 4a, 9c,d, 10c,d, and 11c,d.

SPECIAL COURSES

Public Health Practice 40c, d. Group Dynamics

Lectures and seminars. Two hours a week, time to be arranged, during the third and fourth periods. Dr. PEARL ROSENBERG.

Credit 2 units.

The study of group dynamics is designed to increase awareness of the human relationships occurring within a group and thereby to improve the efficiency of the health worker. Lectures and informal group discussions, which con-

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stitute the laboratory part of the course, give the student an opportunity to become conscious of such concepts as group process, group cohesion, productivity, leadership, group structure and communication.

Public Health Practice 41c, d. Gerontology

Seminars. Two hours a week, time to be arranged, during the third and fourth periods. Staffs of the Departments participating.

Credit 2 units.

This series of seminars offers an opportunity for detailed study of gerontological problems briefly touched upon in other courses. Its general theme is the social and biological challenge of the aging population. Discussions will cover the biological changes in old age, the emotional problems of the aged, the problems of the older worker in industry and retirement, the socio-economic factors in old age, and the control of selected diseases of long duration. At least four sessions will be devoted to the principles of planning a community program for the aged.

Public Health Practice 42c. Government and Public Social Policy

Seminars. Two hours a week, time to be arranged, third period. Dr. FLASH and guest leaders.

Credit 1 unit.

The goal of the seminar is to explore the general socio-governmental context within which public health practitioners must work and lead. From the point of view of public health as a specific social concern the general context of governmental scope and process will be explored, roughly according to the theme: from social force to public institutional environment to administrative process and policy.

Public Health Practice 43c. Rehabilitation

Seminars. *Tuesdays, 9-11, third period.* Miss RICE and associates.

Credit 1 unit.

This course is designed to consider the philosophy of rehabilitation, its relation to income maintenance, the historical development and provisions of the federal rehabilitation program, and the role of the rehabilitation counselor. The developing programs of service, research, and training under public and private auspices are discussed as well as the application of rehabilitation services to particular groups, such as the homebound, mentally ill, the physically handicapped, and the blind. The problems of employment are reviewed. The multidiscipline study and treatment of rehabilitees is demonstrated through a staff conference in a rehabilitation center. Field trips are available.

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Public Health Practice 44c,d. Principles of Supervision and Consultation

Seminars. *Mondays, 11-1, third and fourth periods.* Mrs. DANA, Miss RICE and associates.

Credit 2 units.

This course discusses the objectives and methods of supervision at the various levels of experience. Basic principles of supervision are established and standards of measurement in this learning process are discussed.

The second half of the course is concerned with the distinguishing characteristics of consultation, the principles of consultation as demonstrated in various health professions and in business, the variation in patterns of consultation and their influence on the consultative method, and the application of consultation to health and welfare services.

DEPARTMENT OF SANITARY ENGINEERING

GORDON M. FAIR, S.B., S.M. (hon.), DR. ING. (hon.), *Abbott and James Lawrence Professor of Engineering, Gordon McKay Professor of Sanitary Engineering and Head of the Department*

HAROLD A. THOMAS, JR., S.D., *Gordon McKay Professor of Civil and Sanitary Engineering*

J. CARRELL MORRIS, S.B., PH.D., *Associate Professor of Sanitary Chemistry*

RALPH E. WHEELER, A.B., M.D., DR.P.H., *Lecturer on Sanitary Biology*

LEON A. BRADLEY, S.B., PH.D., *Lecturer on Sanitary Engineering*

Sanitary Engineering 1a. Principles of Sanitation

Lectures and demonstrations. *Tuesdays, Thursdays and Saturdays, 10-12, first period.* Professors FAIR and THOMAS, Associate Professor MORRIS and Dr. BRADLEY.

Credit 3 units.

This course is entitled Principles of Sanitation, and endeavors to live up to the name by emphasizing the broad engineering principles useful in environmental control. An attempt is made to present these principles in a manner comprehensible to students who have no engineering background. Technics of control are discussed, but are presented as illustrations of principle, not as rule-of-thumb procedure which the student is expected to learn by rote. A few field visits are made to show the application of principles in practice.

The ultimate objective of the course is not the conversion of the student into a sanitation expert, ready to design water works, or prescribe pasteuriza-

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tion systems, but rather to prepare him to advise, to cooperate with, and to understand the people who are to do the job. It also acquaints him with the nature and extent of the problem, with what can be and has been accomplished by sanitation, and with what may be expected to be accomplished in the future.

The topics considered include: water supply and purification; sewerage and sewage treatment; refuse collection and disposal; and food, milk and shellfish sanitation.

Sanitary Engineering 2a, b. Sanitary Bacteriology

Lectures and laboratory. *Tuesdays, Thursdays and Saturdays, 8-9 and Wednesdays, 1-5, first and second periods.* Dr. WHEELER.

Credit 5 units.

Morphology, physiology, and cultivation of bacteria. Quantitative bacteriology. Effect of physical and chemical agents on bacteria. Mechanisms of antibacterial activity. Differentiation of Enterobacteriaceae. Immunity. Bacteriology and sanitary control of air, water, and swimming pools. Viruses.

This is the same course as Engineering 274a.

Sanitary Engineering 3c, d. Sanitary Bacteriology and Parasitology

Lectures and laboratory. Time to be arranged, during third and fourth periods. Dr. WHEELER.

Credit 5 units.

Soil and sewage microbiology. Bacteriology and sanitary control of milk and milk products, foods and eating establishments, and shellfish. Parasitology and control of diseases caused by zoological parasites. Arthropods of public health importance and their control. Rodents and rodent control.

This is the same course as Engineering 274b.

The following courses of instruction offered in the Division of Engineering and Applied Physics of the Graduate School of Arts and Sciences are open to properly qualified students:

Engineering 270a. Hydrology and Hydraulics of Water Supply and Waste-Water Disposal. Professor FAIR.

Engineering 270b. Physics and Hydraulics of Water and Waste-Water Treatment. Professor FAIR.

Engineering 271. Chemistry and Biology of Water Supply and Waste-water Disposal. Professor THOMAS and Assistant Professor STUMM.

Engineering 272. Principles of Water Chemistry. Assistant Professor STUMM.

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Engineering 273. Stream Hydrology. Professor THOMAS.

Engineering 275. Seminar on Industrial Water Supply and Waste-water Disposal. Mr. MOORE.

Engineering 276. Advanced Techniques in Water and Sewage Analysis. Associate Professor MORRIS.

DEPARTMENT OF TROPICAL PUBLIC HEALTH

THOMAS H. WELLER, A.B., S.M., M.D., *Richard Pearson Strong Professor of Tropical Public Health and Head of the Department*

GEORGE C. SHATTUCK, A.B., M.D., A.M. (hon.), *Clinical Professor of Tropical Medicine, Emeritus*

DONALD L. AUGUSTINE, S.B., S.D., S.D. (hon.), A.M. (hon.), *Professor of Tropical Public Health* (Absent January 1 to June 30, 1957)

FRANKLIN A. NEVA, S.B., M.D., *Assistant Professor of Tropical Public Health*

ELI CHERNIN, S.B., A.M., S.D., *Assistant Professor of Tropical Public Health*

PAUL F. RUSSELL, A.B., M.D., M.P.H., *Visiting Lecturer on Tropical Public Health*

EDWARD I. SALISBURY, M.D., *Visiting Lecturer on Tropical Public Health*

FRED L. SOPER, A.B., S.M., M.D., DR.P.H., *Visiting Lecturer on Tropical Public Health*

GEORGE M. SAUNDERS, A.B., M.D., *Visiting Lecturer on Tropical Public Health*

WILLARD H. WRIGHT, D.V.M., S.M., PH.D., *Visiting Lecturer on Tropical Public Health*

JACQUES M. MAY, M.D., *Visiting Lecturer on Tropical Public Health*

SAMUEL W. SIMMONS, S.B., PH.D., *Visiting Lecturer on Tropical Public Health*

GEORGE R. COATNEY, PH.D., *Visiting Lecturer on Tropical Public Health*

HARRY MOST, S.B., M.D., D.T.M. & H., D.M.S., *Visiting Lecturer on Tropical Public Health*

CHIA-TUNG PAN, B.SC., M.D., M.P.H., *Instructor in Tropical Public Health*

EDWARD H. MICHELSON, S.M., PH.D., *Research Associate in Tropical Public Health*

JOHN H. HANKS, S.B., PH.D., *Lecturer on Bacteriology and Immunology*

Students wishing to concentrate in Tropical Public Health must possess a knowledge of pathology, in addition to the basic course requirements for admission as degree candidates.

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Tropical Public Health 1c,d. The Ecology and Prevention of Tropical Diseases

Lectures, laboratory exercises, and demonstrations. *Tuesdays and Thursdays, 2-5, third and fourth periods.* Dr. WELLER, Dr. AUGUSTINE, Dr. NEVA, Dr. CHERNIN and associates.

Credit 5 units.

This course deals with the important health hazards of the poorly sanitated regions of the world. It is concerned with the factors which combine to exert a deleterious effect on human welfare in underdeveloped areas. Thus, consideration is given to climate, food supply, social, and economic conditions, as they relate to the serious disease problems of the tropics. The clinical aspects of tropical medicine are not neglected, but emphasis is placed on diagnostic procedures for specific diseases and on methods for their prevention or control. Consideration is given to recent advances in our knowledge of the insect-borne diseases, including their distribution and incidence, host-parasite relations, and the available methods of protecting both the individual and the community.

Admission to this course is contingent upon an adequate background in the pre-clinical medical sciences, especially histology and pathology. Students who lack training in these disciplines will be admitted only subject to the approval of the Head of the Department.

Tropical Public Health 2d. Problems and Programs in Tropical Health

Lectures and conferences. *Wednesdays, 11-1, fourth period.* Staff of the Department.

Credit 1 unit.

This course is designed to acquaint the students with existing national and international health programs in tropical countries. Formal presentation of subjects dealing with health conditions and problems in representative tropical regions will be made by visiting lecturers, each a distinguished leader in the field. These will be followed by informal conferences in which the students will be expected to participate. Attention is given to the development of effective tropical health programs through application of technics adapted to the needs of different peoples and climates. Registration is open to all students.

Tropical Public Health 5c,d. Seminar

Seminars and discussions. One hour session twice a month throughout the third and fourth periods. Time to be arranged. Staff of the Department.

Credit .5 unit.

Students particularly interested in tropical health will meet with staff members for the presentation and discussion of current literature and original

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investigations. Admission for credit is subject to the approval of the Head of the Department.

Tropical Public Health 6b. Parasitic Infections of Man

Lectures, laboratory exercises, and demonstrations. *Tuesdays, Thursdays, and Saturdays, 10-1, during December.* Dr. WELLER, Dr. AUGUSTINE, Dr. NEVA, Dr. CHERNIN and associates.

Credit 1.5 units.

This course is designed primarily for students in the School of Medicine. It is open, however, to a limited number of students registered in the School of Public Health. The important helminth and protozoan parasites of man are considered with reference to their geographic distribution, identification, mode of transmission, pathogenesis, immune reactions, and methods for prevention and control. Clinical aspects and chemotherapy of parasitic diseases are discussed. Emphasis is given to methods of laboratory diagnosis. Arthropods of parasitologic importance are briefly surveyed.

Tropical Public Health 20. Research

Opportunity is offered to qualified students to work on problems under the supervision of the staff. A number of parasites of medical importance are maintained for studies on metabolism, host-parasite relations, and chemotherapy. Arrangements may be made for students to work in laboratories of hospitals situated within the tropics or to cooperate in organized field investigations.

Tropical Public Health 40d. Laboratory Technics

Conferences and laboratory. Staff of the Department.

Time and credit to be arranged.

Students are offered the opportunity to learn the technics of handling parasitic agents in culture or in laboratory animals, and to gain experience in the use of procedures employed in routine diagnostic work.

Enrollment limited and subject to the approval of the instructor.

Section IV
General Information

GENERAL INFORMATION

REGISTRATION

Registration in the School of Public Health for the academic year 1956-57 takes place from Monday, September 17 to Friday, September 21. A departmental advisor is assigned to each student to consult with him about his selection of courses and to advise him throughout the year. Adequate time during registration week should be allowed by the student for discussion of his program with his advisor and the Dean or Assistant Dean of the School, who must approve each schedule.

FOREIGN STUDENTS

During registration week each student who comes from outside the United States will have a conference with the Faculty Advisor for Foreign Students to discuss his particular needs and interests. The Faculty Advisor for Foreign Students and also the staff of the Dean's Office are available for consultation with students throughout the year.

All students who are not citizens of the United States will be referred before registration to the Counsellor for Foreign Students, 24 Quincy Street, Cambridge, where they will present a statement of admission, show their passports, and fill out a Student Registration form. They will then receive a card for presentation at registration, showing they have been cleared by the office of the Counsellor for Foreign Students.

VETERANS

Information about the procedure to be followed by students who are eligible for educational benefits under either of the G.I. Bills or the Rehabilitation Bill, may be secured from the Secretary of the School or from the Veterans Affairs Section of the Comptroller's Office, Lehman Hall, Cambridge.

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FEES AND EXPENSES

The fee for tuition is \$1,150 for the academic year for full-time students. Each candidate for a degree must have one year of residence at the School at full tuition. Degree candidates enrolled for more than one year may pay tuition at a reduced rate, depending on the amount of time spent at the School, as follows:

Candidates for Master's Degrees:

1. Second year at half tuition rate if the student is studying at the School full-time; in proportion for less than full-time, but not less than \$100 per term.
2. Second year, if the student is away from the School and working on a prescribed program of field training, a guidance fee of \$100 per term.

Candidates for Doctoral Degrees:

1. One year of residence and full tuition beyond the Master's degree or equivalent.
2. Second year at half-rate tuition if the student is continuing studies at the School full-time; in proportion for less than full-time, but not less than \$100 per term.
3. Second year, if the student is away from the School and working on his thesis, a guidance fee of \$100 per term.
4. After the second year, no tuition fee unless the student is working at the School; in such cases the tuition is \$100 per term.

Part-time Special Students

The tuition fee for part-time special students varies according to the courses taken and is based on the proportion of the annual fee for instruction which the credit units for each course bear to the total number of credits necessary for the degree of Master of Public Health, plus \$5.00 for each course. For example, a part-time student taking a course with a credit unit value of 2 would pay a tuition fee of \$62.50; a student taking a course with a credit unit value of 4 would pay \$120.00. If a part-time student, who has paid tuition at

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the course rate, becomes a degree candidate, the \$5.00 course fees are not included as part of the tuition required for the degree.

Health Fee

Each full-time student will be charged a fee of \$61.50 per year for health and medical care. Part-time students working at the *rate* of substantially half-time or less and living at home may be excused from the payment of such fee at any time within two weeks after their registration, upon the recommendation of the Dean.

Payment of Fees

Bills for tuition and fees will be issued and payable as follows:

Issued Payable

At registration		{ $\frac{1}{4}$ of the tuition for the year $\frac{1}{2}$ medical and hospital fee for the year	
Nov. 20	Dec. 10	{ $\frac{1}{4}$ of the tuition for the year board through October 31 miscellaneous charges	
Jan. 21	Feb. 8	{ $\frac{1}{4}$ of the tuition for the year $\frac{1}{2}$ medical and hospital fee for the year board through December 31 miscellaneous charges	
April 22	May 10	{ $\frac{1}{4}$ of the tuition for the year board through March 31 miscellaneous charges	
June 5 *	June 12	{ board to the end of the year miscellaneous charges	
June 28	July 15	{ board to the end of the year miscellaneous charges	

Students who are candidates for degrees must have paid all dues to the University at least one day before the day upon which the degrees are to be voted. A student who leaves during the year is charged to the end of the tuition period in which he leaves provided before

* Applies only to candidates for degrees.

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that time he gives the Dean notice in writing of his withdrawal; otherwise he is charged to the end of the tuition period in which such notice is given.

A student who leaves the University for any reason whatever must pay all charges against him immediately upon receipt of a bill from the Bursar. Every student will be held responsible for the payment of fees until he has notified the Dean of his intention to withdraw from the School.

All term bills will be sent to the student at his local address unless the Bursar is requested in writing to send them elsewhere.

Any student whose indebtedness to the University remains unpaid on the date fixed for payment is deprived of the privileges of the University until he is reinstated. Reinstatement is obtained only by consent of the Dean of the School in which the student is enrolled, after payment of all indebtedness, and a fine of \$10 for late payment.

Bond Requirement

Upon entrance to the School every student is required to file with the Bursar a bond in the sum of \$500 as security for payment of University bills. The bond must be signed by two bondsmen, both of whom must be citizens of the United States, or by a surety company duly qualified to do business in Massachusetts. No officer or student of the University will be accepted as a bondsman and in no case will more than one parent be accepted. In lieu of the bond a student may deposit with the Bursar \$500 in United States Treasury coupon-bearing bonds, or \$500 in cash, which will bear no interest. Blank forms of bonds may be obtained at the Dean's office or from the Bursar.

STUDENT HEALTH SERVICE

Under the University Health and Insurance Plan students at the School receive medical care in the Harvard Medical Center Clinic at the Peter Bent Brigham Hospital and insurance toward hospital expenses, at a fee of \$61.50 per year. All full-time students are re-

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quired to pay this fee. The hospital insurance runs for a period of twelve months and covers hospitalization both in Boston and elsewhere.

Officers of the armed services, or those required to carry hospital insurance by governmental agencies may request exemption from the insurance portion of the fee but will be required to pay the clinic fee in the amount of \$42.50. Exemption from the insurance will be granted only after the student submits evidence that he has satisfactory coverage for hospital expenses.

Dependents of students may be included in the insurance aspects of the plan, if the student so elects; the rates are \$26 for wives or husbands and \$23.75 for one or more children, for twelve months.

Every new student paying the medical fee is required to undergo a complete medical examination, by appointment, shortly after admission to the School.

Evidence of recent successful vaccination against smallpox is required for entrance to Harvard University and a certification form for this purpose is sent to each student who is accepted for admission.

Any illness necessitating absence from classes should be reported to the Student Health Office by the student, or an attending physician, and to the Information Office at the School.

In order to realize maximum benefit from the opportunities provided by the academic program of the School, students must be in excellent physical and mental health. Prospective students are urged to undergo a thorough examination to satisfy themselves of their fitness before making arrangements to enter the School.

HOUSING

There are no dormitories for students of the School of Public Health but they may get their meals at Vanderbilt Hall dining room, the Medical School dormitory. Single students usually can find furnished rooms or apartments in the vicinity of the School, or in nearby residential sections such as Brookline. Houses or apartments for families are more difficult to obtain and therefore married

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students who plan to bring their families are advised to arrive in Boston at least three weeks in advance of the opening of School, in order to have time to secure living quarters. The School is glad to be of assistance by supplying information about available places, but the responsibility for securing housing rests with the students.

EMPLOYMENT

Generally it is not advisable for a student to seek employment as a means of financing his training because the course of study at the School is an intensive, full-time program. If the wife of a student has secretarial or technical skills and wishes to obtain temporary employment, she may consult the Harvard Medical Center Personnel Office in Building A of the Medical School after getting settled in Boston. Wives of foreign students who wish to work in Boston should indicate this when obtaining their visas for the United States.

SCHOLARSHIPS AND FELLOWSHIPS

The Harvard School of Public Health has a limited number of scholarships which are granted annually to individuals of high professional promise, with awards ranging from part tuition to tuition plus an additional amount, according to the qualifications and financial needs of the applicants. These scholarships are intended primarily for citizens of the United States, and in general preference will be given to applicants under 35 years of age. Since the scholarship funds are limited, applicants should also investigate other sources of support.

Before an applicant can be considered for a scholarship, he must be admitted to the School. Admission and Scholarship application forms may be obtained from The Secretary, Harvard School of Public Health, 55 Shattuck Street, Boston 15, Massachusetts. Completed applications for the year 1957-58, together with transcripts and letters of recommendation, should be returned to The Secretary before *March 1, 1957*. Scholarship awards will be announced by

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May 1, 1957. Under exceptional circumstances awards may be made at other times.

In addition to the Harvard School of Public Health Scholarships, there are a few General University Scholarships and Fellowships which, under the terms of the original gift to the University, may be awarded to students in any part of the University, including the School of Public Health. Many of these are for persons from a particular city, state or country, for study of a particular field, or for those with other special qualifications. Applications for these scholarships must be submitted, through the School of Public Health, by February 1st of the year preceding the academic year for which the award is desired. A pamphlet describing these University Scholarships may be obtained from The Secretary of the School of Public Health.

STUDENTS, 1955-1956

DEGREE CANDIDATES AND FULL-TIME SPECIAL STUDENTS

Al-Azzawi, J. Hamdi, M.B.,CH.B.	Baghdad, Iraq
Alter, E. Mary, A.B., M.N.	Toledo, Ohio
Averill, Hugh M., D.D.S.	Webster, N. Y.
Bailey, Cynthia, A.B.	Melrose, Mass.
Banasiewicz-Rodriguez, Maria, M.D.	Boston, Mass.
Barry, Eugene V., S.B.	Cincinnati, Ohio
Bartholomay, Anthony F., A.B., A.M.	Wellesley Hills, Mass.
Berry, Charles A., A.B., M.D.	Riverside, Calif.
Burwell, Robert R., S.B., M.D.	Casper, Wyo.
Calabi, Ornella, B.SC., M.SC., S.M.	Chicago, Ill.
Canlas, Marcelo S., M.D.	San Juan, Rizal, Philippines
Cantwell, Katherine T., A.B.	Albany, N. Y.
Chandrapananda, Amara P., M.D., D.SC. IN MED.	Bangkok, Thailand
Chapman, Kenneth I., A.B., S.M.	Indianapolis, Ind.
Clough, Ruth T., A.B., A.M.	Bangor, Maine
Coons, Dwight O., M.D.	Hamilton, Ont., Canada
Daggy, Richard H., S.B., S.M., PH.D., M.P.H. (in absentia)	Dhahran, Saudi Arabia
Doherty, Ralph L., M.B.,B.S.	Innisfail, Queensland, Australia
Domke, Herbert R., S.B., M.D., M.P.H. (in absentia)	Kirkwood, Mo.
Donaldson, Harry J., Jr., S.B.	Cambridge, Mass.
Dormin, K. Barbara, S.B. IN ED.	Syracuse, N. Y.
Drake, Alina M., S.B.	Berkeley, Calif.
Dunham, Marguerite C., S.B., M.D.	Wolfeboro, N. H.
Earnshaw, E. Mary, B.A.SC.	Regina, Sask., Canada
Espinoza, Carlos W., M.D.	Tarija, Bolivia
Fillios, Louis C., A.B., S.M. IN HYG.	Cambridge, Mass.
Fischer, Frances E., S.B., S.M.	Cleveland, Ohio
Freymann, Moye W., S.B., M.D.	Omaha, Nebr.
Fukushima, Ichirō, M.D.	Tokyo, Japan
Garcia, Edito G., M.D.	Manila, Philippines
Gastanaga, Anibal, CHEM.E.	Lima, Peru
Gould, D. Gail H., A.B.	Cambridge, Mass.
Gupta, Om P., B.SC., B.D.S., S.M. IN HYG.	Delhi, India
Hanna, Azmi T., M.B.,CH.B., D.P.H.	Alexandria, Egypt

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Hibben, Herbert A., M.D.	Cleveland, Tenn.
Hill, Milton T., B.C.E., M.C.E.	Montgomery, N. Y.
Hoover, David B., B.S.F.	Baltimore, Md.
Hunt, Blair T., A.B., M.D.	Roxbury, Mass.
Ingbar, Mary L., S.B., A.M., PH.D.	Auburndale, Mass.
Jacka, Cyril K., B.A.	Montmorency, Victoria, Australia
Johnson, Louis F., Jr., S.B., M.D.	Gloucester, Mass.
Jones, Eugenia E., S.B.	Cambridge, Mass.
Khan, Mohammad, M.B., B.S.	Karachi, Pakistan
Kundsin, Ruth B., A.B., A.M.	Squantum, Mass.
Lang, Robert H., A.B., M.D.	Kerrville, Mass.
LeFort, Franck F., M.D., A.M.	Port-au-Prince, Haiti
Levin, Lester, A.B.	Philadelphia, Pa.
Ludwig, John H., B.S.C.E., M.S.C.E.	Bethesda, Md.
Mahar, Irene R., S.B.	Albany, N. Y.
Martoatmodjo, Soekartijah	Djakarta, Indonesia
McEnge, Fannie, S.B., A.M.	Tuskegee, Ala.
McFarland, Emily F., A.B.	Cambridge, Mass.
Metzner, Franz N., M.D.	Hildesheim, West Germany
Midwood, Hazel, S.B.	Cranston, R. I.
Miller, David C., M.D.	Natick, Mass.
Miller, Eugene G., M.D.	Chicago, Ill.
Musgrave, Ernest E., M.D.	Santurce, Puerto Rico
Nuzzolo, Lucio, M.D.	Rome, Italy
O'Hara, Desmond, A.B.	Washington, D. C.
Palasiri, Ubolsri, B.SC.PHARM., M.N.S.	Bangkok, Thailand
Payzin, H. Sabahattin, M.D.	Ankara, Turkey
Pitts, Frances H., S.B., S.M. IN HYG. & PHYS.ED.	Stoughton, Mass.
Pliskin, Boris, M.D.	Tel-Aviv, Israel
Prawiranegara, R. Dradjat, M.D.	Djakarta, Indonesia
Prieto, Claudio L., M.D.	Asuncion, Paraguay
Rao, V. Narayana, M.B., B.S., D.P.H.	Poona, Bombay, India
Reddy, William J., A.B.	Brighton, Mass.
Robbins, Jack H., M.D.	Fort Lauderdale, Fla.
Rosen, Evelyn R., S.B.	Revere, Mass.
Sampaio, Arnaldo, M.D., M.P.H.	Sintra, Portugal
Sayanha-Vikasis, Chindabha S., M.D., M.P.H., S.M. IN HYG.	Bangkok, Thailand
Scharffenberg, John A., S.B., M.D.	Loma Linda, Calif.
Schwabe, Calvin W., S.B., S.M., D.V.M., M.P.H.	Auburn, Ala.
Schwartz, Arnold D., A.B., M.D.	Jamaica Plain, Mass.

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Senft, Alfred W., A.B., M.D., D.T.M.&H.	Temple, N. H.
Shortridge, Lucy J., S.B.	Camden Point, Mo.
Silides, Demetra J., A.B.	New York, N. Y.
Sinisterra, Leonardo, M.D.	Cali, Colombia
Smith, Charlotte A., A.B.	Aliquippa, Pa.
Smith, Edwin E., M.D.	Wollaston, Mass.
Sogandares, Lucila E., S.B., S.M.	Panama City, Panama
Stennis, Hugh J., M.D.	Abilene, Texas
Stobo, Elizabeth C., S.B., A.M.	Garrison, N. Y.
Stone, Beatrice S., A.B., S.M. IN S.S.	Brookline, Mass.
Sweeley, Jean B., A.B., M.S.W.	Boise, Idaho
Takos, Michael J., S.B., S.M., M.D.	Hialeah, Fla.
Thiraveja, Suph, M.D., M.P.H.	Dhonburi, Thailand
Toker, Donald L., S.B., M.D.	Euclid, Ohio
Tomabechi, Konosuko, M.D., DR.MED.SC.	Tokyo, Japan
Ujjin, Pairatana, M.D.	Bangkok, Thailand
Uram, Jerome A., S.B., S.M., S.M. IN HYG.	Arlington, Va.
(in absentia)	
Vijil y Tardon, Camilo, PH.B., M.D., M.P.H.	Lausanne, Switzerland
Vinson, John W., S.B.	New York, N. Y.
Wellin, Edward, A.B., PH.D.	Brookline, Mass.
Werrin, Milton, M.D.V.	Philadelphia, Pa.
Whiting, Marjorie G., S.B., A.M., M.P.H.	Hanover, N. H.
Wilkinson, Thomas K., A.B.	Springfield, Mass.
Wyshak, Grace, A.B.	Chestnut Hill, Mass.
Yopez, Miguel E., M.D.	Guayaquil, Ecuador
Young, Marjorie A. C., S.B., ED.M., M.P.H.	Dorchester, Mass.
Zomzely, Claire E., S.B.	Little Falls, N. J.

PART-TIME STUDENTS

Badawi, Batishwa	Hassake, Syria
Barrett, Austin J., A.B.	Haverhill, Mass.
Bayka, Iskender, M.D.	Ankara, Turkey
Bugard, Pierre, M.D., PH.D.	Paris, France
Doten, Letitia E., S.B. IN ED.	Newton, Mass.
DuBois, Mary E., S.B.	Albion, Maine
Elashoff, Robert M., S.B., A.M.	Newton Center, Mass.
Fieber, Arnold W.	Natick, Mass.
Friedrich, Marlene A.	Heidelberg, Germany
Keenan, M. Louise, A.B., ED.M.	Everett, Mass.
Kramer, Lawrence I., Jr., A.B., A.M.	Waban, Mass.
Leahy, Joseph E., B.MECH.ENGIN.	Brockton, Mass.

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Lenihan, Ellenora, S.B. IN N.ED.	Dorchester, Mass.
Mascarenhas, Melita, B.SC.	Delhi, India
Moodie, Aileen D.	Mowbray, South Africa
Mora, Ines	Bogotá, Colombia
Morris, Laura B., S.B. IN ED., M.S.W.	Roxbury, Mass.
Mullin, Gerard B., S.B.	Wollaston, Mass.
Paterson, Jane E., M.A.	Edinburgh, Scotland
Peyton, Mary E. F., A.B., S.M.	West Lafayette, Ind.
Pizzuto, Carmen S., A.B., A.M., M.S.W.	Boston, Mass.
Risquez, Rafael, M.D., M.P.H.	Caracas, Venezuela
Schüler, Pedro H., M.D.	Santiago, Chile
Tierney, John T., A.B., M.S.W.	Pawtucket, R. I.
Toy, Mary, S.B. IN B.A., M.B.A., M.S. IN S.S.	Boston, Mass.
Verghese, Aleyamma, B.SC.	Kundara, Travancore-Cochin, India
Zyzniewski, Cecelia K., S.B. IN ED.	Cambridge, Mass.

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DEGREES

On June 16, 1955, the following degrees were conferred:

MASTER OF PUBLIC HEALTH, *Magna cum Laude*

- Avedis Samuel Donabedian, B.A. (*American Univ. of Beirut*) 1940, M.D. (*ibid.*) 1944
James Lee Goddard, M.D. (*George Washington Univ.*) 1949
Craig Stoddard Lichtenwalner, M.D. (*Long Island Coll. of Medicine*) 1949

MASTER OF PUBLIC HEALTH, *cum Laude*

- Robert Lloyd Bragg, S.B. (*Florida A. & M. Univ.*) 1936, A.M. (*Boston Univ.*) 1938, M.D. (*Columbia Univ.*) 1952
Thomas Arthur Collins, A.B. (*Stanford Univ.*) 1935, M.D. (*ibid.*) 1940
Hale Henry Cook, A.B. (*Cornell Univ.*) 1938, M.D. (*Harvard Univ.*) 1942, B.D. (*Hartford Theological Seminary*) 1947
Hilliard D. Estes, M.D. (*Harvard Univ.*) 1950
Fritz Milton Gilbert Holmstrom, M.D. (*Harvard Univ.*) 1949
Ana Kaempffer de Medina, M.D. (*Univ. of Chile*) 1950
Ernesto Medina, M.D. (*Univ. of Chile*) 1950
Theodore Ashton Montgomery, M.D. (*Univ. of Southern California*) 1947
Herman Stanley Parish, S.B. (*Coll. of Charleston*) 1941, M.D. (*Medical Coll. of the State of South Carolina*) 1943
Evelyn Rose, S.B. (*Univ. of Pennsylvania*) 1949
Julian Elvis Ward, A.B. (*Univ. of Texas*) 1948, S.M. (*Baylor Univ.*) 1952, M.D. (*ibid.*) 1952
Per Reider Wøien, M.D. (*Univ. of Oslo, Norway*) 1947
Theresa Ting Woo, A.B. (*Coll. of Pacific*) 1931, M.D. (*Univ. of Michigan*) 1934
Raymond Arthur Yerg, S.B. (*Seton Hall*) 1938, M.D. (*Georgetown Univ.*) 1942

MASTER OF PUBLIC HEALTH

- Mohammad Hadi Adham, M.D. (*Univ. of Tehran, Iran*) 1952
Bo Yngve Akerrén, M.B. (*Univ. of Upsala*) 1948, LIC.MED. (*Univ. of Gothenburg*) 1952
Muvaffak Ali Akman, M.D. (*Univ. of Istanbul*) 1947
Guilda Marguerite Albert, S.B. (*Boston Coll.*) 1954
George Raymond Anderson, S.B. (*Yale Univ.*) 1948, M.D. (*ibid.*) 1949
Sofia Bona-de Santos, M.D. (*Univ. of the Philippines*) 1938
William Setzer Brumage, M.D. (*Baylor Univ.*) 1937
Tavisak Chulavachana, M.D. (*Univ. of Medical Sciences, Thailand*) 1954

SCHOOL OF PUBLIC HEALTH

- Joseph John Claro, S.B. (*Manhattan Coll.*) 1944, M.D. (*Georgetown Univ.*) 1948
 Cameron Corrigan, B.Sc. (*Manitoba Univ.*) 1931, M.D. (*ibid.*) 1937
 Anne Mary Drislane, A.B. (*Coll. of St. Rose*) 1936, M.D. (*Albany Medical Coll.*) 1940
 Jean Roberta DuBois, S.B. (*Syracuse Univ.*) 1948
 Mary Caroline Egan, S.B. (*Syracuse Univ.*) 1944, S.M. (*Cornell Univ.*) 1949
 Peggy June Crooke Fry, S.B. (*Univ. of Texas*) 1949
 Gilbert Ellis Gayler, A.B. (*Harvard Univ.*) 1916, M.D. (*ibid.*) 1920
 Michio Hashimoto, M.D. (*Osaka Imperial Univ.*) 1948
 Ona Mae Haslebacher, S.B. (*Western Reserve Univ.*) 1945
 Sujarti Jatanasen, M.D. (*Univ. of Medical Sciences, Thailand*) 1952
 David O. Jones, M.D.V. (*Ohio State Univ.*) 1943, S.M. (*ibid.*) 1952
 Leon Arthur Knight, S.B. (*La Sierra Coll.*) 1944, M.D. (*Coll. of Medical Evangelists*) 1944
 Erich Landauer, DR.ING. (*Technical Institute at Stuttgart*) 1930
 Editha Wharton Maqbool Ali, M.R.C.S. (*England*), L.R.C.P. (*London*) 1928, D.T.M.&H. (*Univ. of London*) 1929
 Edward Francis Marra, S.B. (*Trinity Coll.*) 1945, M.D. (*Boston Univ.*) 1950
 John Patrick McCann, M.D. (*Marquette Univ.*) 1949
 Leo Miller, A.B. (*Harvard Coll.*) 1940, S.M. (*Boston Univ.*) 1948
 George T. Nilson, S.B. (*Boston Univ.*) 1950, ED.M. (*ibid.*) 1953
 James William Nolan, A.B. (*Syracuse Univ.*) 1937, M.D. (*ibid.*) 1943
 James Everett Peavy, M.D. (*Baylor Univ.*) 1935
 Mary Elizabeth Fouse Peyton, A.B. (*Univ. of Denver*) 1930, S.M. (*Univ. of Colorado*) 1932
 Gene Collins Phelps, M.D.V. (*Iowa State Coll.*) 1946
 Robert Kay Quinnell, S.B. (*Univ. of North Carolina*) 1944, M.D. (*Cornell Univ.*) 1946
 Nallepilly Ranganatha Ramakrishnan, B.A. (*Madras Xian Coll.*) 1936, M.B., B.S. (*Madras Medical Coll.*) 1942, D.P.H. (*All India Inst. of Hygiene & Public Health*) 1948
 Paule Rey, M.D. (*Univ. of Geneva*) 1953
 Frederick Ramsay Ritzinger, S.B. (*Univ. of Washington*) 1944, M.D. (*Univ. of Illinois*) 1948
 Harold Paul Rizika, A.B. (*Syracuse Univ.*) 1948, M.D. (*Univ. of State of New York*) 1953
 Lawrence Orred Roberts, M.R.C.S. (*England*), L.R.C.P. (*London*) 1932, M.B., B.S. (*Univ. of London*) 1932, M.R.C.P. (*ibid.*) 1934, M.D. (*ibid.*) 1936
 Nestor Manahan Santiago, M.D. (*Univ. of the Philippines*) 1944
 Calvin Walter Schwabe, S.B. (*Virginia Polytechnic Inst.*) 1948, S.M. (*Univ. of Hawaii*) 1950, M.D.V. (*Alabama Polytechnic Inst.*) 1954
 Itsuzo Shigematsu, M.D. (*Tokyo Univ.*) 1941, D.M.Sc. (*ibid.*) 1952

HARVARD UNIVERSITY

- Robert Earl Shirley, S.B. (*Univ. of Cincinnati*) 1945, M.D. (*ibid.*) 1947
Eleanor Haynes Smith, A.B. (*Emmanuel Coll.*) 1945, M.D. (*Tufts Coll. Medical School*) 1949
Jerry Frank Jaroslav Stara, M.D.V. (*Univ. of Georgia*) 1954
Leon Jair Taubenhau, A.B. (*Rice Inst.*) 1933, M.D. (*Tulane Univ.*) 1937
Antonio Velasco, M.D. (*Univ. of Buenos Aires*) 1937
Camilo Vijil y Tardon, PH.B. (*Univ. of Paris, Sorbonne*) 1930, M.D. (*Univ. of Lausanne*) 1939, M.D. (*Univ. of Chile*) 1940
Charles William Westerbeck, M.D. (*St. Louis Univ.*) 1947
Norma Joyce Wilson, S.B. (*Walla Walla Coll.*) 1951
Saul Thomas Wilson, M.D.V. (*Tuskegee Inst.*) 1950
Asta Holga Winther, M.D. (*Univ. of Copenhagen*) 1950
Stanley Zimering, S.B. (*New York Univ.*) 1950

MASTER OF INDUSTRIAL HEALTH

- Earl Russell Larson, A.B. (*Univ. of Minnesota*) 1950, S.B. (*ibid.*) 1951, M.D. (*ibid.*) 1953
William Charles Robinson, B.SC. (*Univ. of Alberta*) 1936, M.D. (*ibid.*) 1936

MASTER OF SCIENCE IN HYGIENE

(*in the field of Biostatistics*)

- Judith Rhoda Chatfield, S.B. (*Univ. of New Hampshire*) 1952

(*in the field of Industrial Health*)

- Christopher Harald Wood, M.R.C.S. (*England*), L.R.C.P. (*London*) 1947, M.B., B.S. (*Univ. of London*) 1950, D.P.H. (*ibid.*) 1953

(*in the field of Industrial Hygiene*)

- Max Bart, A.B. (*Brooklyn Coll.*) 1949
Jerome Kenneth Brasch, S.B. IN CHEM.ENGIN. (*Illinois Inst. of Technology*) 1947
Lee Beach Fosdick, B.CHEM.ENGIN. (*Ohio State Univ.*) 1948
Leonard Charles Mandell, S.B. IN MECH.ENGIN. (*Univ. of Alabama*) 1941, M.MECH.ENGIN. (*Massachusetts Inst. of Technology*) 1946
John Alexander Spence, A.B. (*Whittier Coll.*) 1942, S.M. (*Purdue Univ.*) 1944, PH.D. (*ibid.*) 1946
Janet Elizabeth Walkley, S.B. (*Tufts Coll.*) 1942

(*in the field of Maternal & Child Health*)

- Chindabha Sribunruang Sayanha-Vikasit, M.D. (*Chulalankarana Univ.*) 1938, M.P.H. (*Univ. of Minnesota*) 1950

SCHOOL OF PUBLIC HEALTH

(*in the field of Microbiology*)

Chau-ching Lin, M.D. (*Nagoya Univ.*) 1942

(*in the field of Nutrition*)

Jean Margaret Vasey, B.Sc. (*Univ. of London*) 1947

(*in the field of Medical Care*)

Matthew Huxley, A.B. (*Univ. of California*) 1947

(*in the field of Mental Health*)

Herbert Arthur Otto, A.B. (*Univ. of Michigan*) 1946, S.M.W. (*Tulane Univ.*) 1950

Sarah Thorpe Otto, A.B. (*Univ. of Georgia*) 1946, S.M.W. (*Tulane Univ.*) 1950

On March 12, 1956, the following degrees were conferred:

DOCTOR OF PUBLIC HEALTH

Leo Arthur Kaprio, LIC.MED. (*Univ. of Helsinki*) 1945, M.P.H. (*Johns Hopkins Univ.*) 1948

Thesis: A Study of Long-Stay Patients in Four General Hospitals

Special Field: Public Health Practice (Medical Care)

Alfredo Riquelme B., M.D. (*Univ. of Chile*) 1942, M.P.H. (*Univ. of Michigan*) 1946

Thesis: Nutritional Problems in Chile and Their Implications with Public Health

Special Field: Nutrition

DOCTOR OF SCIENCE IN HYGIENE

Louis Charles Fillios, A.B. (*Harvard Univ.*) 1948, S.M.HYG. (*ibid.*) 1953

Thesis: The Importance of the Gonadal System in the Regulation of Cholesterol Metabolism

Special Field: Nutrition

MASTER OF PUBLIC HEALTH

Henry Charles Moritz, S.B. (*Univ. of Utah*) 1946, M.D. (*ibid.*) 1948

Pairatana Ujjin, M.D. (*Siriraj Medical School, Thailand*) 1951

(*as of the Class of 1939*)

John James Poutas, A.B. (*Boston Coll.*) 1926, M.D. (*Harvard Univ.*) 1930

HARVARD UNIVERSITY

MASTER OF SCIENCE IN HYGIENE

(in the field of Biostatistics)

Grace Wyshak, A.B. (*Smith Coll.*) 1949

(in the field of Nutrition)

Jacqueline Billette, B.A. (*Marguerite Bourgeoys Coll.*) 1946, B.Sc. (*Univ. of Montreal*) 1948

FALL TERM — FIRST PERIOD (SEPTEMBER 24 TO NOVEMBER 17, 1956)

<i>Course</i>	<i>Credit Units</i>	<i>Course</i>	<i>Credit Unit</i>
PUBLIC HEALTH		MICROBIOLOGY	
1a Ecology: Biological and Social *	3	1a, b Principles of Bacteriology and Immunology	1 (2)
		12a Biological Products in Public Health	1
BIOSTATISTICS		NUTRITION	
1a, b Principles of Biostatistics *	2 (4) †	1a Public Health Nutrition	1.5
EPIDEMIOLOGY		PHYSIOLOGY	
3a Clinical Infectious Diseases	.5	1a, b Human Physiology and Its Applications to Public Health	1 (2)
15a, b Advanced Epidemiology	1-2 (2-4)	PUBLIC HEALTH PRACTICE	
INDUSTRIAL HYGIENE		4a Control of Cancer and other Chronic Diseases	2
2a, b Industrial Air Analysis	2 (4)	5a, b Community Health Education	1.5 (3)
MATERNAL AND CHILD HEALTH		SANITARY ENGINEERING	
1a, b Basic Problems	2 (4)	1a Principles of Sanitation **	3

Unscheduled courses: Industrial Hygiene 3a, b; 44a, b; Microbiology 15a, b; Nutrition 6a; Sanitary Bacteriology 2a, b. (See Department for description)

* Required of all degree candidates

** Required of all M.P.H. candidates

† Figures in parentheses are units for entire course, if this runs longer than one period

Fall Term -- First Period September 24 to November 17, 1956

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

9	NUTRITION 1a (PUBLIC HEALTH)
10	PUBLIC HEALTH 1a(*) (ECOLOGY: BIOLOGICAL AND SOCIAL)

MICROBIOLOGY 1a,b (PRINCIPLES)
SANITARY ENGINEERING 1a (**)

NUTRITION 1a (PUBLIC HEALTH)
PUBLIC HEALTH 1a(*) (ECOLOGY: BIOLOGICAL AND SOCIAL)

MICROBIOLOGY 1a,b (PRINCIPLES)
SANITARY ENGINEERING 1a (**)

NUTRITION 1a (PUBLIC HEALTH)
PUBLIC HEALTH 1a(*) (ECOLOGY: BIOLOGICAL AND SOCIAL)

EPID. 3a (INFECTIOUS DISEASE CLINIC)
SANITARY ENG. 1a(**) (PRINCIPLES)

12

1

PHYSIOLOGY 1a,b (HUMAN PUB. HLTH.)

PHYSIOLOGY 1a,b (HUMAN PUB. HLTH.)

2	BIOSTATISTICS 1a,b(*) (LECTURE & LABORATORY)
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MICROBIOLOGY 12a (BIO. PROD.)	PUBLIC MAT. HEALTH 4a (CANCER) (BASIC PROB.)	INDUST. HYGIENE 2a,b (AIR ANAL.)
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EPIDEM. 15 a,b (SEMINAR)	P. H. P. 5 a,b (COMM. HEALTH EDUC.)
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PUBLIC MAT. HEALTH & CHILD PRACTICE HEALTH 4a (CANCER) (BAS. PROB.)	INDUST. HYGIENE 2 a,b (AIR ANAL.)
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BIOSTATISTICS 1a,b(*) (LECTURE & LABORATORY)
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(*) REQUIRED OF ALL
DEGREE CANDIDATES
(**) REQUIRED OF ALL
M.P.H. CANDIDATES

5

FALL TERM — SECOND PERIOD (NOVEMBER 19, 1956 to JANUARY 26, 1957)

<i>Course</i>	<i>Credit Units</i>	<i>Course</i>	<i>Credit Units</i>
ENVIRONMENTAL HYGIENE 1b **	2	MICROBIOLOGY 1a, b Principles of Bacteriology and Immunology	1(2)
BIOSTATISTICS 1a, b Principles of Biostatistics *	2(4) †	11b Public Health Laboratory Procedures	3
EPIDEMIOLOGY 1b Principles of Epidemiology * 3b Clinical Infectious Diseases 15a, b Advanced Epidemiology	2.5 .5 1-2(2-4)	NUTRITION 2b, c Biochemistry and Physiology of Nutrition	2(4.5)
INDUSTRIAL HYGIENE 2a, b Industrial Air Analysis	2(4)	PHYSIOLOGY 1a, b Human Physiology and Its Application to Public Health	1(2)
MATERNAL AND CHILD HEALTH 1a, b Basic Problems	2(4)	PUBLIC HEALTH PRACTICE 1b Principles of Public Health Practice ** 2b Organization of Medical Care 3b Psychosocial Problems 5a, b Community Health Education	3 2 1 1.5(3)

Unscheduled courses: Industrial Hygiene 3a,b; 44a,b; Microbiology 15a,b; Nutrition 6b; Sanitary Bacteriology 2a,b. (See Department for description)

* Required of all degree candidates

** Required of all M.P.H. candidates

† Figures in parentheses are units for entire course, if this runs longer than one period

Fall Term - - Second Period

November 19, 1956, to January 26, 1957

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

9	PUBLIC HEALTH PRACTICE 1b (**) (PRINCIPLES)	MICROBIOLOGY 1a,b (PRINCIPLES) (BIOCHEM.)	PUBLIC HEALTH PRACTICE 1b (**) (PRINCIPLES)	MICROBIOLOGY 1a,b (PRINCIPLES) (BIOCHEM.)	PUBLIC HEALTH PRACTICE 1b (**) (PRINCIPLES)	NUTRITION 2b,c (BIOCHEM.)	EPIDEMIOLOGY 3b (INFECTIOUS DISEASE CLINIC)
10		ENVIRON- MENTAL HYG. 1b (**) (P.H.P. 5a,b (COMM. HEALTH EDUC.)		ENVIRON- MENTAL HYG. 1b (**) (P.H.P. 5a,b (COMM. HEALTH EDUC.)		ENVIRON- MENTAL HYG. 1b (**) (P.H.P. 5a,b (COMM. HEALTH EDUC.)	
11	EPIDEMIOLOGY 1b (*) (PRINCIPLES)	P.H.P. 2b (MED. CARE)	EPIDEMIOLOGY 1b (*) (PRINCIPLES)	PUBLIC HEALTH PRACTICE 2b (MEDICAL CARE)	EPIDEMIOLOGY 1b (*) (PRINCIPLES)		
12			MICROBIOLOGY 11b (LAB. PROC.)				
1		PHYSIOLOGY 1a,b (HUMAN - PUBLIC HEALTH)		PHYSIOLOGY 1a,b (HUMAN - PUBLIC HEALTH)			(*) REQUIRED OF ALL DEGREE CANDIDATES
2	BIOSTATISTICS 1a,b (*) (LECTURE & LABORATORY)	MAT. & MICRO- CHILD BIOLOGY/HYGIENE 11b (LAB. (AIR (BASIC) PROC.) ANAL.)	PUBLIC HEALTH PRACTICE 3b (PSYCHO- SOCIAL)	MAT. & MICRO- CHILD BIOLOGY/HYGIENE 11b (LAB. (AIR (BASIC) PROC.) ANAL.)			(**) REQUIRED OF ALL M.P.H. CANDIDATES
3			EPIDEMIOLOGY 15a,b (SEMINAR)				
4							
5							

SPRING TERM — THIRD PERIOD (FEBRUARY 4 TO MARCH 30, 1957)

<i>Course</i>	<i>Credit Units</i>	<i>Course</i>	<i>Credit Units</i>
PUBLIC HEALTH		MICROBIOLOGY	
3c History and Philosophy of Public Health	1	2c, d Current Research	.5(1)
BIOSTATISTICS		13c Rickettsial and Viral Diseases	3
2c, d Analysis of Population Data	2(3)†	NUTRITION	
3c, d Analysis of Data Resulting from Special Studies	2(3)	2b, c Biochemistry and Physiology of Nutrition	2.5(4.5)
4c, d Statistical Methods in Program Evaluation	1(2)	3c, d The Laboratory Basis of Nutrition	1(2)
EPIDEMIOLOGY.		4c Dietary Evaluation	1
2c Clinical Epidemiology	1.5	PHYSIOLOGY	
3c Clinical Infectious Diseases	.5	2c Environmental Physiology	1
5c Practice of Epidemiology	3	PUBLIC HEALTH PRACTICE	
15c, d Advanced Epidemiology	2-3(4-6)	9c, d Mental Health Problems	1(2)
INDUSTRIAL HYGIENE		10c, d Public Health Administration, Health Education, Public Health Nursing and Social Work	3(6)
1c Basic Problems	3	11c, d Administration of Medical-Care Programs	2(4.5)
2c, d Industrial Air Analysis	2(4)	30c, d Field Study in Administration	(1.5)
4c Personnel Administration	1.5	43c Rehabilitation	1
5c Human Problems of Adjustment in Industry	1.5	44c, d Supervision and Consultation	1(2)
6c Industrial Medicine	3	TROPICAL PUBLIC HEALTH	
MATERNAL AND CHILD HEALTH		1c, d Ecology and Prevention of Tropical Diseases	2.5(5)
3c, 3d Services, Programs and Administration	2(4)		
5c Social Problems and Available Social Services for Children	1		

Unscheduled courses: Biostat. 5c,d; Ind. Hyg. 3c,d, 44c,d; Microb. 12c,d; 15c,d; P.H.P. 5c,d; 6c,d; 7c,d; 8c,d; 40c,d; 41c,d; 42c; Nutrition 7c; San. Eng. 3c,d; T.P.H. 5c,d. (See Department for description)

† Figures in parentheses are units for entire course, if this runs longer than one period.

Spring Term -- Third Period

February 4 to March 30, 1957

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

8:30

9	MAT. & CH.H. 3c,d (SERV. PROG. ADM)	EPIDEM. 5c (PRAC)	
10	P.H.P. 4,4 C,d (SUP)	EPID. 2c (CLIN)	

BIOSTATIST. 2-3 c,d (POP. & SPEC.)	P. H. P. 43 c (REHAB.)	MAT. & CH.H. 3c,d (SERV. PROG. ADMIN)	EPIDEM. 5c (PRAC)
PHYS. 2c (ENVIR)	NUTR. 2b,c (BIOCH)	PUBLIC HEALTH PRACTICE 11 c,d (MEDICAL CARE)	EPID. 2c (CLIN)

IND. HYG. 4c (PERS)	IND. HYG. 6c (MED.)	IND. HYG. 5c (HUM.)
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BIOSTATIST. 2-3 c,d (POP. & SPEC.)	P.H.P. PRAC. 11c,d	MICRO. 2c,d (RES.)
PHYS. 2c (ENVIR)	NUTR. 2b,c (BIOCH)	IND. HYG. 5c (HUM.)
MAT. & CH.H. 5c (SOCIAL)	EPIDEM. 5c (PRAC)	IND. HYG. 6c (MED.)
BIO. 4		IND. HYG. 5c (HUM.)

PUBLIC HEALTH 3c (HISTORY)	EPIDEM. 3c (CLIN. INFECTION. DIS)
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2

PUBLIC HEALTH PRAC. 10 c,d (ADMIN.)	INDUST. HYGIENE 1c (BASIC)	MICRO-BIOLOGY 13c (RICKETTS & VIRAL DISEASES)
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PUB. HEAL. PRAC. 9 c,d (MENT)	IND. TROP. PUB. HEAL. 2c,d (AIR ANAL)	INDUST. HYG. 1c (FIELD TRIP)	PUBLIC HEAL. MICRO-BIOL. 13c (ADMIN)
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INDUS. HYG. 2c,d (AIR ANAL)	TROP. PUB. HEAL. 30c,d (FIELD VISIT)	INDUST. HYG. 1c (BASIC)	INDUS. HYG. 1c (BASIC)
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PUBLIC HEAL. PRAC. 10 c,d (ADMIN)	INDUS. HYG. 1c (BASIC)	EPID. 2c (CLINIC)
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5

SPRING TERM — FOURTH PERIOD (APRIL 8 TO JUNE 1, 1957)

<i>Course</i>	<i>Credit Units</i>	<i>Course</i>	<i>Credit Units</i>
BIostatISTICS		MICROBIOLOGY	
2c, d Analysis of Population Data	1(3)†	2c, d Current Research	.5(1)
3c, d Analysis of Data Resulting from Special Studies	1(3)	NUTRITION	
4c, d Statistical Methods in Program Evaluation	1(2)	3c, d The Laboratory Basis of Nutrition	1(2)
		5d Human Nutritional Disease	1.5
EPIDEMIOLOGY		PUBLIC HEALTH PRACTICE	
3d Clinical Infectious Diseases	.5	9c, d Mental Health Problems	1(2)
7d Non-Infective Mass Disease and Injury	2	10c, d Public Health Administration, Health Education, Public Health Nursing and Social Work	3(6)
8d Quantitative Method in Epidemiology	1	11c, d Administration of Medical-Care Programs	2.5(4.5)
9d Military Preventive Medicine	1	12d Control of Communicable Disease (with Epidemiology 6d)	1
15c, d Advanced Epidemiology	2-3(4-6)	30c, d Field Study in Administration	(1.5)
INDUSTRIAL HYGIENE		44c, d Supervision and Consultation	1(2)
2c, d Industrial Air Analysis	2(4)	TROPICAL PUBLIC HEALTH	
7d Industrial Hygiene Engineering	3	1c, d Ecology and Prevention of Tropical Diseases	2.5(5)
8d Hygienic Aspects of Ventilation	1.5	2d Problems and Programs in Tropical Health	1
MATERNAL AND CHILD HEALTH			
3c, 3d Services, Programs and Administration	2(4)		
6d Maternal and Child Nutrition	1		
7d Physical Growth and Development	1		
8d Recent Advances in Obstetrical Care	1		

Unscheduled courses: Biostat. 5c,d; Ind. Hyg. 3c,d; 40d; 41d; 44c,d; Microb. 12c,d; 15c,d; P.H.P. 5c,d; 6c,d; 7c,d; 8c,d; 40c,d; 41c,d; Nutrition 7d; San. Eng. 3c,d; T.P.H. 5c,d; 40d. (See Department for description)

† Figures in parentheses are units for entire course, if this runs longer than one period.

Spring Term -- Fourth Period

April 8 to June 1, 1957

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

9	MATERNAL & CHILD H. 3 c,d	(SERVICES, PROGRAMS & ADM.)	EPIDEMIOLOGY 7d (NON-INFEC.)					EPIDEMIOLOG. 3d (CLINICAL INFECTION DIS.)	EPIDEMIOLOG. 8d (QUANTITAT.)
10			BIOSTAT. 2 c,d (POP.)	MAT. & CHILD H. 6d (NUTR.)	INDUST. HYG. 8 d (VENTIL.)				
11	P.H.P. 4/4 c,d (SUPERVISION)			PUBLIC HEALTH PRAC. 11 c,d (MED. CARE)					
12		NUTRITION 5d (HUM. DIS.)							
1									

MAT. & CHILD.H 3 c,d (SERV. PR. & ADM.)	EPIDEM. 7d (NON- INFEC.)
	TROP. PUB.H. 2d (PROG.)

INDUST. HYGIENE 8 d (VENTIL.)	P.H.P. 12 d & EPID. 6d (COMM. DIS.)	MAT. & CH. H. 7d (GRO.)
BIOSTATIST. 3 c,d (SPEC.)	EPID. 9d (MIL.)	NUTR. 3 c,d (LAB.)
MICRO-BIOLOGY 2cd (RES.)		BIO. 4cd (METH.)

IND. HYG. 7d (ENG.)	PUBLIC HEALTH PRAC. 10 c,d (ADMIN.)
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TROP. PUB. HEAL. 1 c,d	IND. HYG. 7d (ENG.)	PUBLIC HEAL. PRAC. 10 c,d (ADMIN.)

IND. HYG. 7d (ENG.)	PUBLIC HEAL. PRAC. 10 c,d (ADMIN.)
NUT. 5d (HUM. DIS.)	EPIDEM. 15 c,d (SEMI)

TROP. PUB. HEAL. 1 c,d	IND. HYG. 2 c,d (AIR ANAL.)	PUB. HEAL. PRAC. 30 c,d (FIELD VISIT)
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IND. HYG. 7d (ENG.)	PUBLIC HEALTH PRAC. 10 c,d (ADMIN.)
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KEY TO AERIAL VIEW

- I School of Public Health, 55 Shattuck Street
 - Administration, Departments of Biostatistics, Industrial Hygiene, Maternal and Child Health, Physiology and Public Health Practice
- A Administration Building, Medical School
 - Second Floor, Library
- B, C, D, E Laboratories and Classrooms, Medical School
 - Building E2, Room 238, Department of Tropical Public Health
- F Vanderbilt Hall
- II Peter Bent Brigham Hospital
- III and V Children's Hospital
- IV Boston Lying-in Hospital
- VI School of Public Health, Huntington Building, 1 Shattuck Street, Departments of Epidemiology, Nutrition and Microbiology





CALENDAR FOR THE ACADEMIC YEAR 1956-57

*September 17, Monday to
September 21, Friday*

Registration of Students

FALL TERM, SEPTEMBER 24, 1956 TO JANUARY 29, 1957

September 24, Monday

First Period begins

October 12, Friday

Columbus Day: a holiday

November 12, Monday

Veterans' Day: a holiday

November 17, Saturday

First Period ends

November 19, Monday

Second Period begins

November 22, Thursday

Thanksgiving Day: a holiday

RECESS FROM SUNDAY, DECEMBER 23, 1956 TO SUNDAY,
JANUARY 6, 1957 INCLUSIVE

January 26, Saturday

Second Period classes end

January 28, Monday to

February 2, Saturday

Field Work

SPRING TERM, JANUARY 30, 1957 TO JUNE 13, 1957

January 30, Wednesday

Registration of new students

February 4, Monday

Third Period classes begin

February 22, Friday

Washington's Birthday: a holiday

March 30, Saturday

Third Period ends

RECESS FROM SUNDAY, MARCH 31, 1957 TO SUNDAY,
APRIL 7, 1957 INCLUSIVE

April 1, Monday to

April 6, Saturday

Field Work

April 8, Monday

Fourth Period begins

April 19, Friday

Patriot's Day: a holiday

May 30, Thursday

Memorial Day: a holiday

June 1, Saturday

Fourth Period classes end

June 3, Monday

Comprehensive Examination

June 13, Thursday

Commencement

